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# COMPUTERWORLD

**Belt-tightening**

## OSF restructures as member firms cut back

By Maryfran Johnson
CAMBRIDGE, MASS.

Taking a cue from its struggling industry sponsors, the Open Software Foundation last week streamlined itself into two main business units, underscoring the importance of its "middleware" software technologies.

Eight jobs were eliminated from support and operations in the restructuring of the 300-employee foundation. Among them was the recently created post held by Chief Operating Officer Gary Bard, who has been reassigned to the task of creating a multivendor interoperability laboratory at OSF headquarters.

Another crucial bit of business will be resolved by the end of this month, when the board of directors is expected to finally reach an agreement on the 1994 funding for the $50 million organization (see story page 15).

> The changes could allow DCE and DME to be better integrated.

"Some board member companies are losing a lot of money right now," said Kurt Friedrich, an OSF board member and general manager at the Open Systems Software Division of Hewlett-Packard Co. "As these companies have had to adjust funding for their own internal engineering, OSF should have its funding adjusted — like any other project."

The restructuring funneled roughly 75% of the OSF's re-

OSF, *page 15*

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## Compaq hatches plan to loosen IBM's PC grip

### Aggressive product rollouts, direct sales key to strategy

By Michael Fitzgerald
HOUSTON

March will see a remade Compaq Computer Corp. roar in with new products and distribution strategies, including a long-awaited move into true direct sales. The plans are part of a major push by Compaq to wrest leadership of the PC industry from the IBM PC Co.

On March 8, Compaq will refresh its ProLinea and Contura families and tweak the DeskPro/I family. ProLinea will gain local-bus graphics, while the Contura line will receive active-matrix displays. The addition of faster processors will beef up the DeskPro/I line, sources said.

A week later, on March 15, Compaq will officially go direct, following up on its recent feint of using direct marketers as a separate reseller channel. Sources said Compaq will establish a toll-free phone number to allow customers to buy its entire product line directly.

Compaq declined to comment on the product or distribution initiatives. A spokesman said only, "Our challenge is to win back customers who prefer to purchase directly from the manufacturer, and you can count on us to address this in the first half of this year."

Commenting on his firm's bid to catch up with a stumbling IBM, Compaq President and Chief Executive Officer Eckhard Pfeiffer said, "IBM hasn't had technology leadership since 1984, and we have a shot at volume leadership."

"He thinks that?" asked Kimball Brown, vice president at Computer Intelligence/Infocorp in Santa Clara, Calif. "IBM is out for blood, and if he thinks he's going to take share from IBM, he's made a mistake."

At the same time, Brown and

Compaq, *page 7*

**CHANGING CHANNELS:** More big corporations are looking at new ways to buy technology. Page 81.

**Sharpened attack**

**Compaq's initiatives include the following:**

**March 8:** New ProLinea, active-matrix Contura, updated DeskPro/I.

**March 15:** Direct sales.

**Early to mid-March:** Price cuts on low-end (486SX and below) desktops.

**April:** New consumer line, 2 slots, on-board digital signal chip.

**May 20:** DeskPro/Ms expected.

**Late May/early June:** New notebooks, including a sub-5-pound model.

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**Networking standards**

## APPN tackles TCP/IP

By Elisabeth Horwitt
RALEIGH, N.C.

**IBM Networking Systems technicians last week detailed the company's strategy for knocking Transmission Control Protocol/Internet Protocol off its perch as the industry's favorite internetworking protocol. The plan: Replace it with a renovated version of IBM's Advanced Peer-to-Peer Networking.**

However, that strategy may have difficulty making a dent in the Systems Network Architecture population already planning its exodus to TCP/IP.

The next phase of IBM's strategy, due within 18 months, centers around APPN+, or APPN High Performance Routing. "We'd like to position it as a premium version of TCP/IP, with the same traits as TCP/IP, only faster and better," said Rick McGee, IBM's director of architecture and telecommunications.

APPN+ will offer three to 10 times the throughput of regular APPN, primarily by minimizing the overhead it takes for each network node to handle data packets, according to Marcia Peters, chief APPN architect.

APPN+'s other big advantage will be dynamic rerouting around failures, according to McGee. TCP/IP already has this feature, in con-

APPN, *page 12*

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## Client/server caveats

By Michael Vizard

**Information systems departments looking to build client/server applications around networked PCs are discovering that each of the four major operating system platforms has critical shortcomings that impact the robustness of the applications and the length of time it takes to deploy them.**

Currently the most popular approach is to build client/server applications that run under Microsoft Corp.'s Windows and DOS as clients attached to OS/2 or Unix servers. However, the drawback is that IS must pay particular attention to how an application behaves on a DOS client because it can crash easily (see story page 16).

The need for a multitasking operating system is beginning to push some IS departments to look at 32-bit options such as IBM's OS/2 2.0, Unix or Microsoft's upcoming Windows NT on both the client and the server. By adopting a multitasking operating system, they expect to create faster, more robust applications that will be easier to maintain in a homogeneous client/server environment.

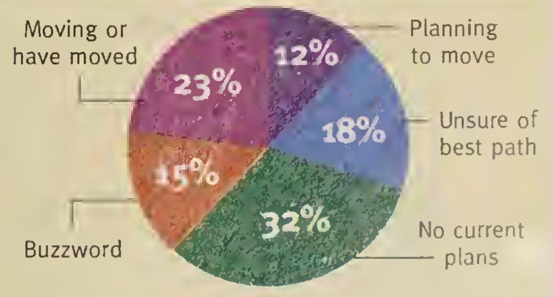
However, the 32-bit platforms are not without drawbacks: Some are missing key features,

Client/server, *page 16*

**What to do?**

Client/server computing remains an enigma to many in these times of downsizing

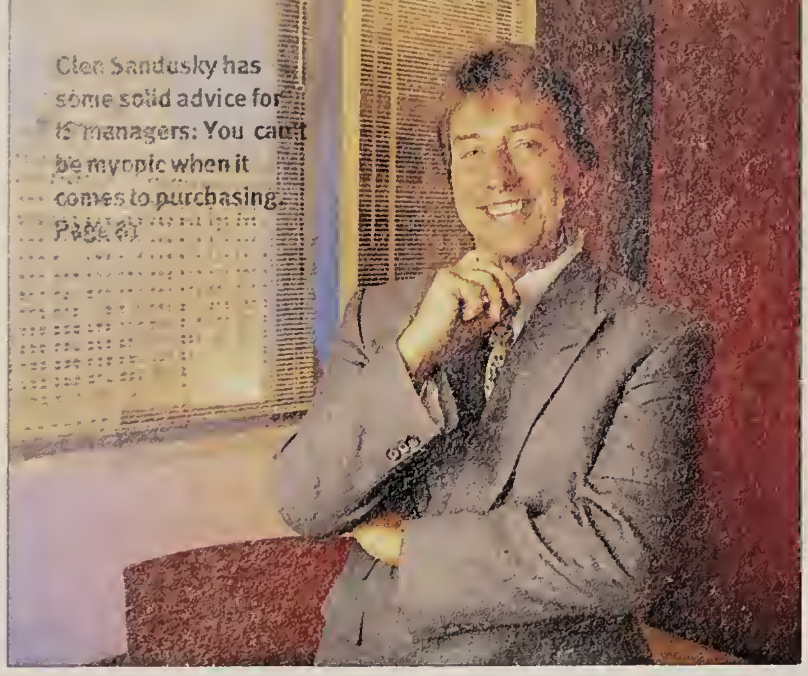
WHICH BEST DESCRIBES YOUR ATTITUDE TOWARD SO-CALLED CLIENT/SERVER COMPUTING?



Percent of respondents (Base: 106)

Source: International Data Corp. CW Chart: Stephanie Faucher

Newspaper


Glen Sandusky has some solid advice for IS managers: You can't be myopic when it comes to purchasing. Page 81

MICHAEL ABRAMSON

## In this issue

### NEWS

**A number of client/server products** and issues were detailed last week. Developers attempting to build cooperative client/server applications on desktop platforms face a host of daunting integration issues. *Page 1.* Making their pitch for the high end of the LAN server market are Netframe Systems, with a family of multiprocessing superservers, and Sun, which is teaming with Novell to build a processor-independent version of NetWare 4.0 that will run on Sun's SPARC-based servers. *Page 4*

**Large systems customers** have plenty to keep a close eye on as IBM formally introduces its new mainframes — sans list prices. *Page 10.* DEC also showed its hand, articulating a mixed VAXcluster strategy due later this spring as well as its most enthusiastic embrace of Unix to date. *Page 14.* However, minicomputer makers, including DEC, are also evaluating Windows NT and developing strategies for using that operating system as an enterprisewide environment. *Page 71*

**Unix and Windows NT** may be gathering some steam, but the Open Software Foundation, under pressure from its sponsors, restructured its business, eliminated eight jobs and is set to establish a new funding model. *Page 1 and 15*

**The intensity of the battle** for the desktop turned up a few notches as Compaq grabbed at IBM's PC mantle with aggressive product rollouts and distribution shifts. *Page 1.* DEC, meanwhile, turns to the PC market. *Page 14*

### VIEWPOINT

**Software licensing practices** are out of step with the times, columnist Elaine Bond says. It's time to abandon tradition and rethink the whole structure. *Page 27*

### IN DEPTH

**Want to know the naked truth** about IS performance? By concentrating on trouble spots, you can come up with an action plan to align IS and the business. *Page 89*

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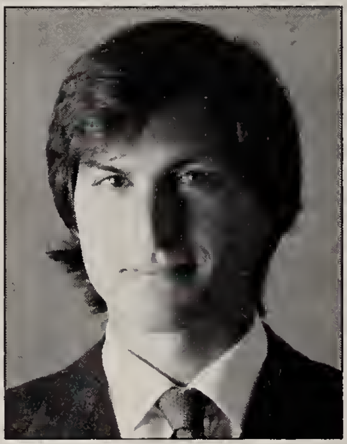
# Next KOs workstation line

By James Daly
REDWOOD CITY, CALIF.

Steve Jobs, Next, Inc.'s chairman and Apple Computer, Inc.'s co-founder, acknowledged last week that he could not make lightning strike twice. Jobs announced plans to scrap his slow-selling workstations and focus solely on software.

Saying he could not allow the struggling firm to remain "a second-tier hardware company," Jobs unveiled a radical restructuring that included the dismissal of 280 of Next's 536 employees. The metamorphosis from a workstation maker to a software supplier should be complete by May 25, the first date of the annual NextWorld show in San Francisco.


**Steve Jobs'** *Next workstations faced huge hurdles*

Next is currently hammering out details to sell its hardware business and state-of-the-art automated manufacturing plant in Fremont, Calif., to Canon, Inc., the Japanese electronics giant that has invested $165 million in the company.

### A long struggle

Next's object-oriented NextStep environment has been available for more than four years but has struggled for both mind share and market share. However, it is expected that the late May release of a version for Intel Corp. platforms — the NextStep 486 — will widen its appeal for users who are looking to quickly develop custom in-house applications.

NextStep users have long praised a design that makes it easier to reuse large chunks of software code, saying it delivers today the kind of object-oriented programming environment potential rivals such as Taligent, Apple and IBM's joint venture, or Microsoft Corp.'s Cairo project will not deliver until next year. But that may not be enough.

"NextStep is a superb way to build apps quickly. So if they can make NextStep fly, that would be a great thing," said Charles Mayer, manager of computer systems and services at Mobil Corp.'s offices in Fairfax, Va. "But I question whether they will be able to do that against competition as tough as Microsoft, Apple and IBM."

Additional competition comes from smaller competitors that are also shipping product. Already, companies such as ParcPlace Systems, Inc. and Digitalk, Inc. offer similar well-regarded platforms for crafting customized applications for corporate developers.

### Unlikely scenario

Analysts agreed that the chances of Next's taking over this object-oriented development market are slim. "Being early with a good OS will help, but Microsoft and Taligent will probably be the two real powerhouses in systems OS in the future," said Tim Bajarin, an analyst at Creative Strategies Research International, Inc. in Santa Clara, Calif. "At best, Jobs can hope to gain a loyal following where creating custom apps fast is a priority."

NextStep 486 also presents significant financial hurdles. In addition to shelling out $995 for the user version, users may need extra circuit boards, memory and disk drive capacity to bring a typical PC up to the sophisticated color, sound and video capabilities of the Next workstation — adding several thousand dollars to the cost of an already expensive machine.

At stake is nothing less than the survival of the company. "If they have another year where they do not make money with this [software] strategy, it could be tough for them to survive," Bajarin added.

In general, Next's customers did not seem overly disappointed by the firm's sudden withdrawal from the hardware world. "I don't think it's a failing; I think it's a smart move," said Tom Campbell, who supervises 325 Next workstations as senior vice president at First National Bank of Chicago.

## Tough sell

The price and proprietary nature of the Next workstation made it hard for founder Steve Jobs to find a market. He first targeted the university market. When that did not work, he followed with an equally unsuccessful strategy of selling to corporate America.

"We're buying commodity workstations — we don't need, and don't want to pay for, the level of robustness the Nextstation affords," said Mike Adelson, project manager at Chrysler Financial in Southfield, Mich.

## Apple tops OS survey

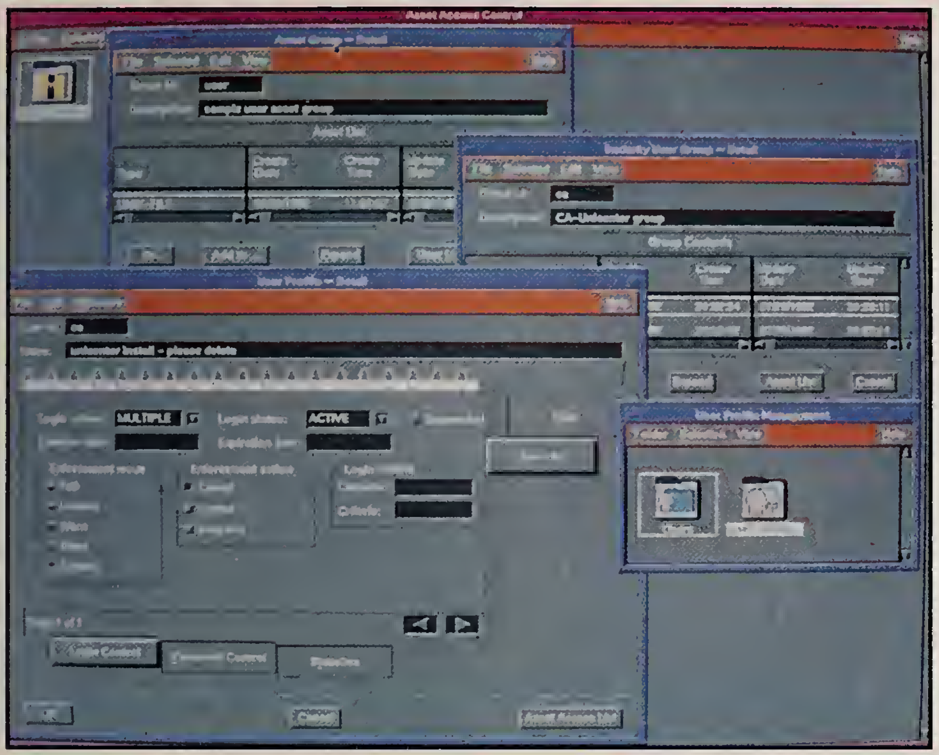
Next week's **CW Guide** on desktop operating systems features user survey results on the major products and a **Firing Line** evaluation of Windows NT. The **Buyers' Scorecard** results (at right) are based on user ratings across 16 categories with scores weighted by factors indicating the importance of each category to the users surveyed.

## Buyers' Scorecard:
## Desktop operating systems

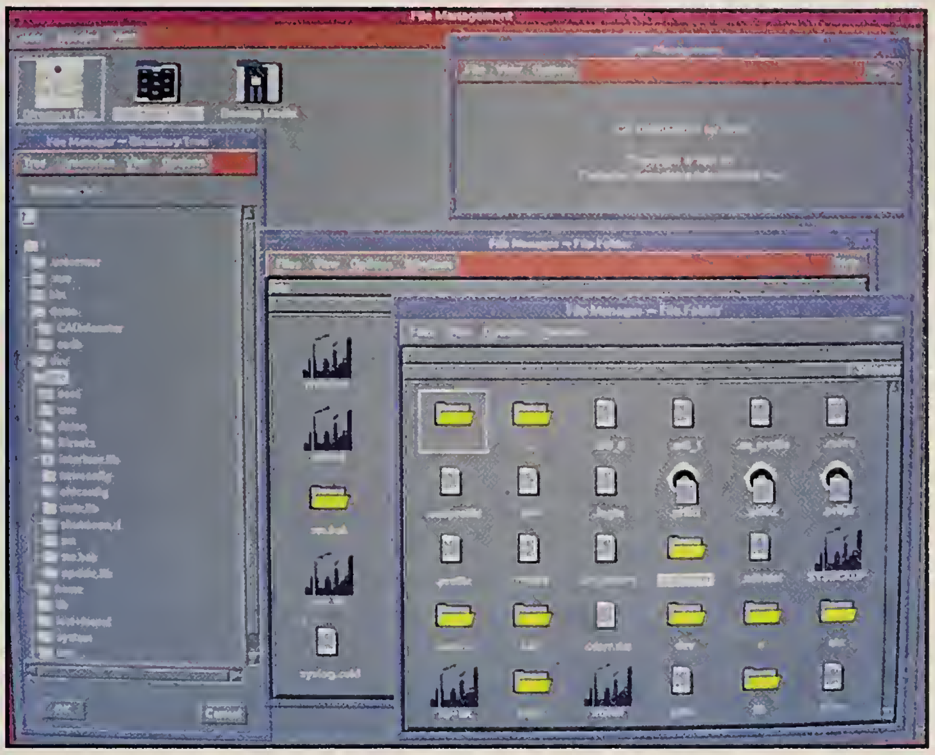
TOTAL POSSIBLE SCORE 100 RESPONDENT BASE: 180

| Apple System 7 | Microsoft Windows 3.1 | SCO Unix Open Desktop | IBM OS/2 2.0 |
|---|---|---|---|
| Score 78 | Score 74 | Score 73 | Score 72 |
| Strength: Ease of use | Strength: Dollar value | Strength: Multitasking | Strength: Speed |

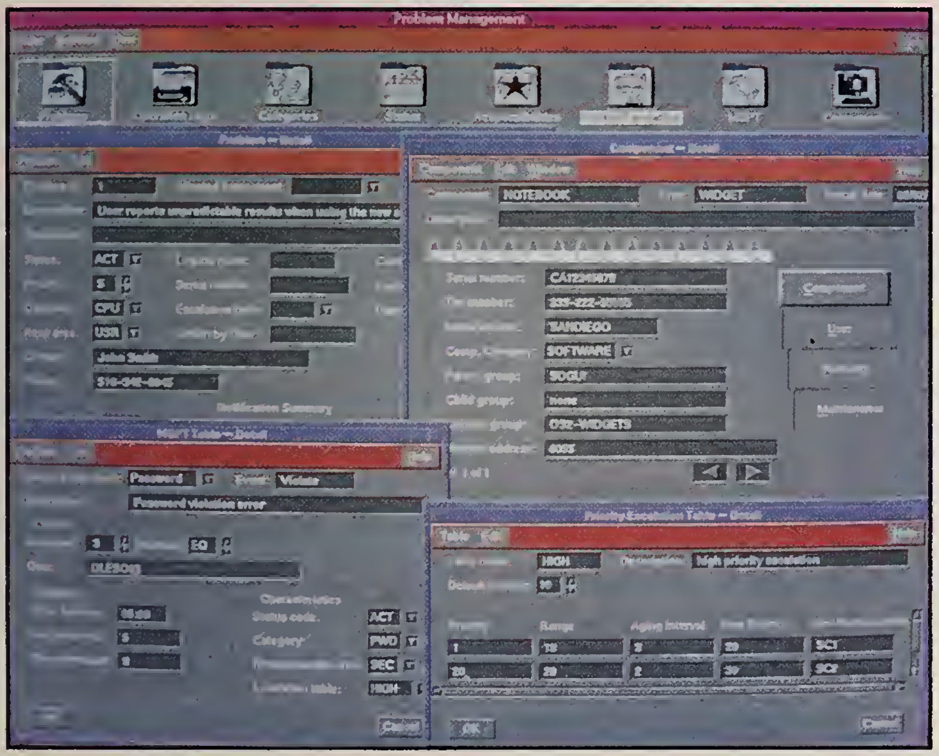
# INTRODUCING NEW CA–UNICENTER: MAKING THE WORLD SAFE FOR UNIX.



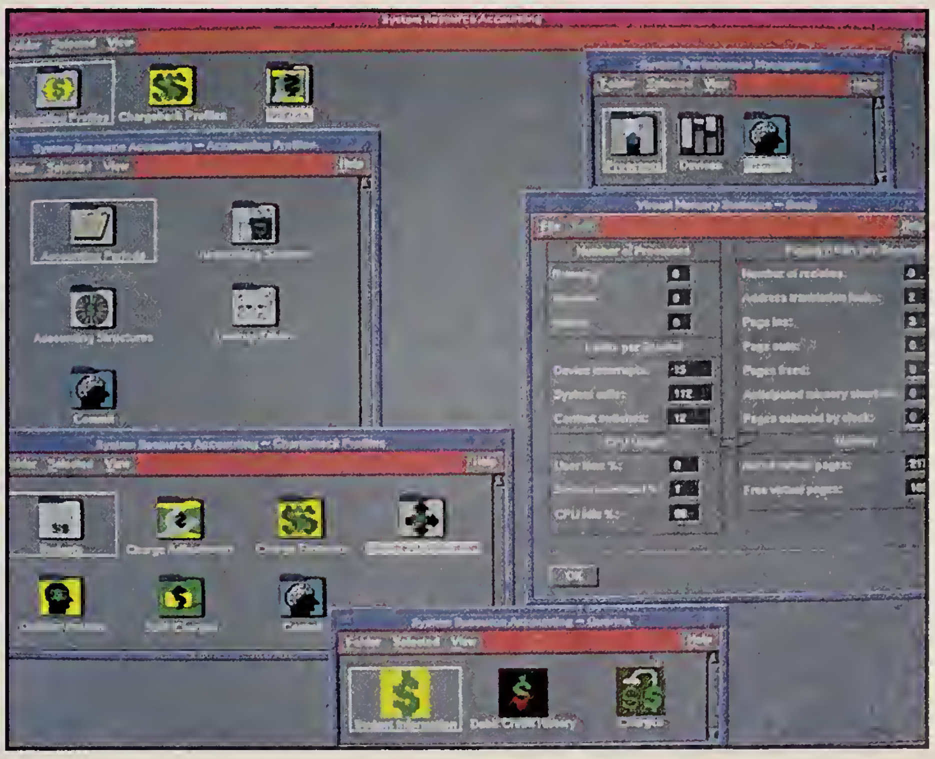
*Security Control gives you single-point control for the entire system. It provides the first and only method for limiting authority of superusers.*



*Storage Management ensures files are backed up and archived. Frees space when file systems become full and keeps backup and archived files safe from accidental or intentional destruction.*



*Help Desk includes Machine Generated Problem Tracking and Priority Escalation– so people are immediately notified of critical problems.*



*Resource Accounting lets you customize billing any way you want – so the right bill has the right information and goes to the right group.*

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Client/server development

# Netframe expands line

By Kim S. Nash
MILPITAS, CALIF

Netframe Systems, Inc. last week confirmed that it intends later this month to ship a new superserver family that offers improved application processing and built-in remote software management — features pivotal to users wanting to build robust client/server applications.

Shops interested in downsizing or consolidating local-area networks are most likely to consider multiprocessing as several factors coalesce to make the boxes more appealing and affordable, users and analysts said.

The impending Pentium chip from Intel Corp., Microsoft Corp.'s Windows NT multiprocessing operating system — and the many applications expected to be written for it — and advances in data storage make multiprocessing "seem real and doable," according to Lynn Berg, program director for midrange computing strategies at Gartner Group, Inc. in Stamford, Conn.

### Year for trials

However, all this activity does not mean the market will soar, Berg cautioned. She said 1993 will be a year of experimentation, with users discovering that superservers can make sense in some client/server scenarios.

Some companies have already forged ahead. "Networks built on machines that can do more than one thing at a time are absolutely the way to go," said Michael West, MIS director at Henredon Furniture Industries, a large furniture maker and retailer in Morganton, N.C.

The company is four to six months away from unplugging a high-end IBM Application System/400 and about a year away from ditching an IBM 4381 mainframe, according to West, who installed four older Netframe superservers several months ago.

Collapsing data processing from the two proprietary platforms to a single wide-area network anchored by multiprocessors serving PC clients gives end users more functionality and better performance, he said.

Henredon has been able to reallocate 30% to 40% of its information systems staff's time from hardware maintenance to new software development, West said.

Netframe's new CS series — four models due within two weeks — promises high-performance application handling by way of dedicated application processors, separate from I/O processors. The 486-based systems scale from one to seven processors and are priced between $29,950 and $74,950.

The goal was to build a single box capable of simultaneously running programs geared for different operating systems. For example, a user might decide to install a Unix manufacturing application and a Windows NT-based human resources program on one Netframe CS server.

Other features include improved fault tolerance via redundant cooling and control systems and the option of a redundant CPU and easier systems administration via the ability to install, diagnose and maintain software remotely from any point on the network.

# NetWare coming to SPARC

By Michele Dostert
MOUNTAIN VIEW, CALIF.

Managers of Novell, Inc. NetWare networks whose Intel Corp.-based servers are running out of steam may soon be able to replace them with powerful, inexpensive SPARC-based servers from Sun Microsystems Computer Corp.

Sun and Provo, Utah-based Novell last week disclosed an agreement to develop a processor-independent version of Novell's forthcoming NetWare 4.0 network operating system that will run natively on Sun's Scalable Processor Architecture (SPARC)-based servers.

To network users and managers, the NetWare on SPARC servers will look and feel just like their familiar Intel-based servers. But unlike Novell's NetWare for Unix products, which run as processes on top of Unix, NetWare for SPARC systems will run directly on the SPARC chip, just as it does now on the Intel chip.

Novell and Sun would not disclose the targeted shipping date for NetWare on SPARC, but they promised that software developer kits for the product would ship by the end of 1993. The agreement is similar to one struck between Novell and Hewlett-Packard Co. in December 1991 to build native NetWare for HP's Precision Architecture-RISC servers, which HP said will ship by the end of 1993.

"Since Novell has such a huge installed base in that market, it's a good move for them," said Bill Sines, vice president of midrange strategies and server research at Technology Investment Strategies Corp. in Framingham, Mass.

The power of SPARC may be overkill for file-and-print serving for spreadheets, word processors and the like, but it will be welcomed by users running databases and graphically based applications, Sines said.

Sun will target its SPARC servers at NetWare users with high-demand applications, such as Wayne Robertson, network administrator at St. Agnes Medical Center in Fresno, Calif. Some of Robertson's applications use 800M bytes of data and are accessed by hundreds of users. "Our current 486/50-MHz servers are just running out of horsepower," he said. "I've been really impressed with the SPARC boxes I've seen, and I'd love to be able to use them as NetWare servers."

Currently, SPARC servers are priced from $5,295, which includes Sun's Solaris operating system. Scott McNealy, Sun's chief executive officer, intimated that SPARC boxes sold as NetWare servers without the Solaris operating system will be even cheaper.

To build NetWare 4.0 for SPARC, Novell will provide what it calls a "NetWare System Interface" to NetWare 4.0, to which Sun will then write its processor and device controllers. Third-party developers of NetWare Loadable Modules (NLM) for NetWare 4.0 will be able to port their NLMs to the SPARC platform by recompiling their code, according to Bob Young, Novell's director of marketing for NetWare.

# UPS makes network management choice

By Elisabeth Horwitt
MAHWAH, N.J.

**After deliberating for a year over products from some 50 vendors, United Parcel Service, Inc. (UPS) has tapped Novell, Inc. and Applied Computing Devices, Inc. to supply and help design its integrated, corporatewide network management system.**

A third vendor, Software Artistry, will provide help desk applications such as problem tracking and asset management.

UPS expects to get back its multimillion-dollar investment in the system — which will support new services and applications — within 18 months, according to Marc Dodge, the package handler's telecommunications manager.

The new services include a cellular network that will provide real-time package tracking.

**Novell's NetWare Management System is now managing multivendor installations at several Fortune 500 companies — either in pilot or production mode.**

While UPS' rivals may be able to field similar customer services, "the differentiator is keeping those services up and running," Dodge said.

Another driver for UPS' network management strategy is the expansion of its local-area network installations from zero to 1,400 NetWare-based Token Ring LANs in the past six years, Dodge said.

"It all boils down to our standalone networks and PCs all coming together into one big whole, and we're recognizing we also have to do network management as a whole," Dodge explained.

UPS has about $1 billion in hardware, software and applications in the field that it has to protect, he added.

The vendors will be working with UPS' information systems and networking people to design a system that distributes network management and user support to corporate sites and yet allows scattered LAN and wide-area network managers to share data about network problems and statistics, Dodge said.

### Performance uptick

The system should boost IS field support people's effectiveness by at least 20%, according to talks with UPS network managers, said Mark Latham, a UPS regional IS manager who worked on the project. "That's significant bucks with 1,100 field people."

UPS' IS budget for 1992 and 1993 is $500 million for each year.

A key component of UPS' strategy is moving user support functions out from a data center to localized help desk support at each of the company's 83 operating regions, Latham said. "Right now we have 2,000 people in 1,400 buildings calling one spot for help on 118 different applications."

UPS decided to decentralize help desk functions "when a lot of companies are going the opposite way [because] we don't want users to have to make a long-distance call to New Jersey" for each problem, Latham said.

Software Artistry will provide the tools to enable local users at the 83 operating regions to "fix their own problems instead of calling central IS all the time," Latham said. These tools include an "expert adviser" that suggests the best action to try and "visualization" tools that provide graphic presentations of the equipment being fixed, he added.

Software Artistry will also supply a common database for LAN and WAN problem tracking so managers on both sides of the house and in different parts of the country can compare notes on what problems came up and how they were handled, Latham said.

### More efficient

While Applied Computing Devices' software will correlate problems between WAN devices and Novell's NetWare Management System for LANs, "sharing data between the LAN and WAN folks [via a database] will save at least 80 phone calls to the data center right off the bat" for each major network problem, Dodge said.

UPS originally hoped to have just one integrated network management system but soon settled for "two primary vendors working together," Dodge said. The company looked at all major so-called integrated network management platforms but concluded that the traditional ones were mostly telecommunications- and carrier-oriented, with "little grasp of LANs and PCs," Dodge said.

Novell's NetWare Management System still has a lot of holes in terms of supporting UPS' multivendor LAN installations, Dodge said. "Novell has the best chance of attracting third-party support to pull this thing off."

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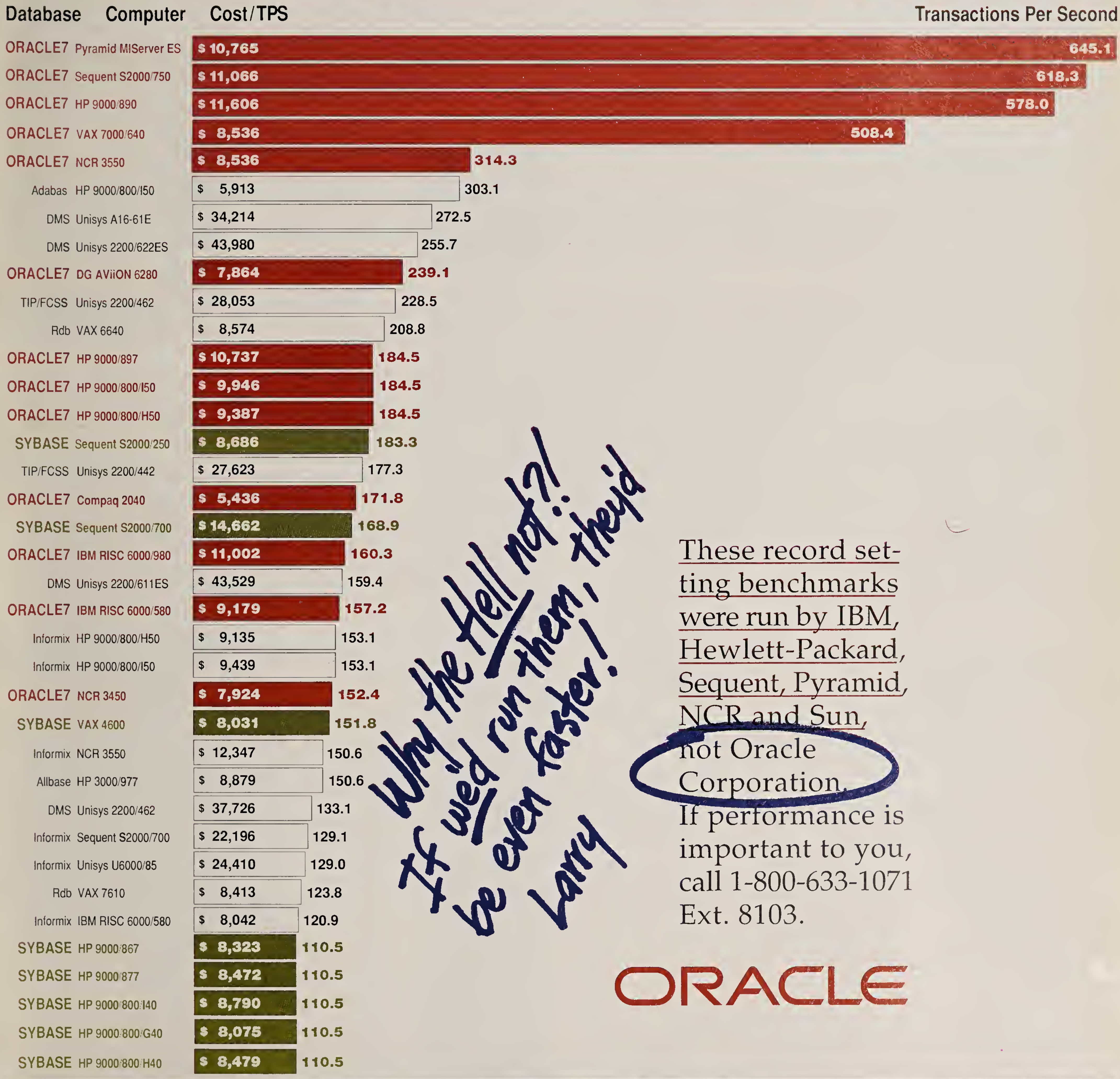

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Larry

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## News Shorts

### Lotus answers licensing move

**Lotus Development Corp.** last week countered **Microsoft Corp.**'s latest licensing foray aimed at large information systems shops. As part of its Lotus Flex sales program, the company is offering customers with 250 units of PC software from Lotus or another vendor the ability to purchase all upgrades for Lotus software during a two-year period. Microsoft implemented a similar program earlier this month. Separately, Lotus announced that it has begun shipping Version 2.0 of Freelance Graphics for Windows, which brings several enhancements to Lotus' presentation graphics software.

### Beyond the 'three R's'

Vendor profits and product quality will suffer unless the math, computer and language skills of entry-level workers are upgraded, according to a committee convened by the **American Electronics Association** (AEA) last week. Working under a federal grant, the AEA committee plans to identify the key worker skills needed to make U.S. vendors more competitive, update school curricula and develop a voluntary standard for worker training in the electronics industry.

### UPS wireless net arrives on time

A $150 million data-over-cellular network for **United Parcel Service, Inc.** goes into operation today. The network, plans for which were announced last year, extends UPS' private land network to some 50,000 trucks in the field. The parcel company will now be able to monitor bar-coded and air and ground deliveries almost immediately.

### Sun, Microsoft work together

**Microsoft** and **SunSelect**, the PC unit of Sun Microsystems, Inc., last week announced support for enhanced interoperability and full integration among Windows for Workgroups, Windows NT and SunSelect's PC Network File System (NFS) software for PC-to-Unix integration. Users of any Windows operating platform will be able to use PC-NFS products to access Unix networks and open systems resources. SunSelect also confirmed its commitment to ship a new PC-NFS for Windows NT in the third quarter.

### UI maps out 1993 Unix plans

**Unix International** released its "1993 Roadmap for Unix Systems and Related Technologies" with the stamp of approval from 50 major user companies. Unix International chose **SunSoft**, a Sun subsidiary, as its reference technology supplier and selected Sun's Open Network Computing distributed computing services as one of the requirements.

**SHORT TAKES** Sun settled out of court for $30 million on two separate securities class-action lawsuits brought by a group of shareholders. . . . **Silicon Graphics, Inc.** last week cut by 13% the entry model prices of its Iris Indigo R3000 reduced instruction set computing PC, from $7,995 to $6,995. . . . **Syncordia Corp.** has gained yet another customer: **Firmenich International SA**, the Geneva-based fragrances and flavorings company, which Syncordia will provide with a network backbone to interconnect six sites in Europe and Princeton, N.J. . . . **BlueLine Software, Inc.** in Minneapolis has purchased **Phaser, Inc.** as a way to extend its IBM Systems Network Architecture network performance monitoring software down to Novell, Inc. local-area networks. . . . **ITT Datacom** will introduce to the U.S. this week copper-based network cabling that the firm "guarantees will support 100M bit/sec. Ethernet," a spokesperson said.

News shorts, *page 16*

# Hospital proves IS can help cut health care costs

By Mitch Betts

INDIANAPOLIS

**Memo to Hillary Rodham Clinton: Hospital information systems that make doctors more cost-conscious when they order drugs and tests could slash the nation's bloated health care bill by an estimated $30 billion.**

One such information system is already in use at Wishard Memorial Hospital in Indianapolis, where a rigorously controlled study showed that it slices an average of 13% (or $887) off a patient's hospital bill — without degrading the quality of care.

"This is very consistent with the Clinton administration's plans for health care reform, where the goal is to squeeze out unnecessary and inefficient services," observed Charles J. Singer, president of Charles J. Singer & Co., an IS consultancy in Wakefield, Mass., that specializes in health care.

Indeed, the system's developers have fired off a letter to make sure Clinton's health care task force is aware of the pioneering study, according to William M. Tierney, a professor of medicine at Indiana University, which manages the hospital. So far, there has been no response to the letter, he said.

### Cost cure

The order-writing system employs approximately 60 Intel Corp. 80386-based PCs linked by an Ethernet local-area network running Novell, Inc.'s NetWare.

More importantly, the custom software was designed specifically to steer doctors toward more cost-effective decisions when ordering expensive drugs and medical tests.

For example, the system leads doctors through a menu of ordering choices and lists the patient's charge for each item. "That's important because most doctors don't have the foggiest idea of the costs of the tests they are ordering," Singer said.

The menus list the most cost-effective tests, discourage some expensive ones, display only reasonable testing intervals (such as three times a week rather than daily) and warn about drug interactions.

In addition, the software uses a technique called "counter detailing," which gives recommendations not to use specific expensive drugs in certain circumstances in an effort to counter the sales pitches of drug companies.

The system lowered patient costs by 13%, according to a study published last month in the *Journal of the American Medical Association.* This would amount to an annual savings of $3 million at Wishard.

Of course, those savings will be offset by the price of the system, which cost about $20,000 per ward for the hardware. The system is now used in 10 wards, three intensive-care units and the emergency room, Tierney said.

If the cost savings are extrapolated nationwide, the ordering system could cut the nation's health care costs by roughly $30 billion a year, said Tierney, the lead author of the $1.3 million study.

The order-writing system will work on a stand-alone basis, Tierney said, but it gains added power from its link with the university's Regenstrief Medical Record System, a 20-year-old database of records for 720,000 Wishard patients.

The link to electronic medical records — still very rare in a world of paper medical charts — means the ordering system can warn doctors about patients' previous test results and drug allergies, for example.

A key question is whether making doctors more cost-conscious degrades the quality of patient care. The study said that although quality is difficult to measure, a review of postdischarge records showed no quality problems, and the computerized warnings about drug complications presumably improved care.

"Cost control and quality improvement need not be mutually exclusive," the study stated.

Moreover, the system provided nurses, technicians and pharmacists with either printed or electronic orders, which are far easier to read than doctors' handwritten orders.

"Legibility is a quality and timeliness issue," said John Page, executive director of the Healthcare Information and Management Systems Society in Chicago. Most hospital pharmacists now get carbon copies of a handwritten order sheet, he said.

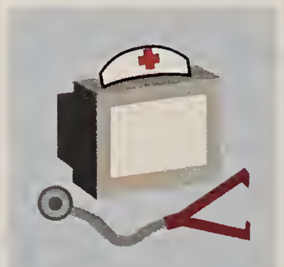
The biggest problem the study uncovered was that doctors complained it takes longer to write orders using PCs than it does with paper.

Tierney said the software has since been streamlined to speed up the process and that in the future, the use of portable pad computers could be beneficial.

The study's authors warned that while their software is biased toward reducing costs, software could be developed that goes the other way.

"Hospitals might be tempted to build menus using protocols that would allow users to order batteries of tests and treatments with one keystroke, which would result in higher costs," the study claimed.

**The system could cut U.S. health care costs by roughly $30 billion.**



### At a glance

**The software** was custom-written by three full-time PC programmers using Advanced Revelation, a menu-driven application builder from Revelation Technologies, Inc. in New York.

**The system** came on-line for one inpatient service in August 1988 and by October 1991 had been implemented throughout the hospital's six inpatient services.

**The $30 billion nationwide cost savings figure** is a rough and conservative estimate derived by taking 10% off the hospital half ($300 billion) of the nation's $600 billion health care bill in 1991 (the year the study was conducted).

### What the doctor ordered

Wishard Memorial's computerized ordering system has significantly cut per-patient costs. Some examples:

| | |
|---|---|
| 15% | Drug costs |
| 12% | Test costs |
| 11% | Hospital stay |
| 13% | Total patient charges |

Base: 1,859 patients compared with a control group of 3,360 patients

Source: *Journal of the American Medical Association*

# Compaq plan

CONTINUED FROM PAGE 1

other analysts said Compaq looks well-positioned to grow rapidly in 1993. Brown predicted the PC maker will sell 2.5 million units this year, up from 1.5 million in 1992. The growth will come at the expense of smaller companies, though, as IBM matches Compaq by selling 4.5 million units in 1993, up from 3.4 million in 1992, Brown predicted.

Still, Pfeiffer's comments are not without support. Compaq has surpassed IBM in several European markets and is poised to do so in Japan. BIS Strategic Decisions in Norwell, Mass., said Compaq's unit sales grew 75% last year.

BIS analyst Jeffrey Henning said selling direct would help Compaq's business model. "Compaq now makes less money per PC sold than Gateway because Compaq has to go through the distribution channel. If I'm Compaq, I can't really putz around with these mail-order companies; I have to go direct myself," he said.

Compaq has driven its overall costs down dramatically, and Pfeiffer hinted that the company plans another dramatic price cut [CW, Feb. 1]. Sources said Compaq will cut prices on its 386 and 486SX systems early next month.

Ross Cooley, Compaq's senior vice president, North America, promised the firm will double its number of distribution outlets by June, largely by adding retail and mass merchant channels. The company also plans to introduce a new low-end family of PCs that fit in below the ProLinea line. This line is expected to appear in the April/May time frame.

Compaq's move to push budding industry standards will probably make users happier.

"We've yet to see a pen-based computer, a wireless computer, the PDAs — any machines taking advantage of PCMCIA cards," said Glen Jurmann, section manager of office technology at Baxter Healthcare Corp. "We have seen very good equipment offered at great prices."

Compaq executives defended this lack of product, saying the company does not want to release technology for technology's sake, ahead of market demand. Compaq has stated it will ship pen computers and personal digital assistants (PDA) in 1993, both of which will likely support Personal Computer Memory Card International Association (PCMCIA) cards.

Compaq's revamped DeskPro/M line, expected to be unveiled May 20, should produce some technological innovation.

At the same time, some said Compaq is vulnerable in its bread-and-butter notebook market. Notebooks generated a quarter of Compaq's sales last year, but the vendor has ignored the market for the 486SX to focus on Intel's now dead-ended SL processor.

Sources said Compaq will unveil new notebook products in May or June, including its first sub-5-pound product.

*Associate editor Carol Hildebrand contributed to this story.*

## Fighting back

The IBM PC Co. is not standing still in the face of a Compaq onslaught.

IBM last week announced price cuts of up to 14% on its Personal System/ValuePoint 325T, 425SX and 433DX and its ThinkPad 300 products. In early April, sources said, IBM will refresh its low-end ValuePoint line, adding a Video Electronics Standards Association VL local bus to the line.

This underscores IBM's newfound aggressiveness, as the new products will appear only seven months after the initial ValuePoint announcement, observers said.

IBM is also expected to revamp the PS/1 line in the same time frame. IBM will add a tower format to the line and two new desktops.

Sources said a broad move on the PS/1 and ValuePoint lines will probably go hand-in-hand with a major move on the PS/2 side of the product line. Other sources said IBM will add PCMCIA slots to its ThinkPad notebooks.

IBM declined to comment on unannounced products.

—*Michael Fitzgerald*

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# General Magic debut offers only illusion

By Michael Fitzgerald

NEW YORK

General Magic pulled no rabbits from its hat and made no newfangled communications products appear, but a full house at the Hudson Theatre applauded anyway at the debut of the most-hyped technology since pen computing.

Perhaps the audience liked the sleight of hand because the Mountain View, Calif., company held its coming-out party to discuss two software products that do not yet exist but that could fuel a market for personal intelligent communicators.

Personal intelligent communicators, construed broadly, will serve as a communications Swiss army knife. They will offer a mix of functions, acting as handheld cellular phones, wireless data/fax modems, personal organizers, data-retrieval centers, pagers and other devices that have yet to be invented.

General Magic already has licensees for its Telescript programming language and communications protocol. For instance, Apple Computer, Inc. has said it will use Telescript for its Newton Personal Digital Assistant, and AT&T-backed EO, Inc. is using Telescript embedded in Go Corp.'s PenPoint operating system on its now-shipping personal intelligent communicator.

General Magic will also license Magic Communicating Applications Platform (CAP), an object-oriented operating system. Currently, Sony Corp., Motorola, Inc. and Philips Telecommunications N.V. have licensed Magic CAP.

### Nothing definite yet

Neither product is finished after two years of development, though Marc Porat, General Magic's president and chief executive officer, said the company would provide concrete product details starting this summer. A reference mock-up with a pen-input device and a phone was shown. This is expected to be based on a Motorola processor initially.

Users responded positively to the basic premise of General Magic's plan but said the company has a lot to prove and faces numerous pitfalls ahead.

Joseph Barrett, a technology analyst at Whirlpool Corp. in Benton Harbor, Mich., said Whirlpool may be able to make use of Telescript-capable products in the next two to three years. "This matters to us just because of its concepts about sharing information — products that use this, if they work, will give more people access to more information. That's why it could be valuable," Barrett said, citing the software's ground-up focus on improved communications.

The impact on information systems is hard to measure, but the prospect of seamless wireless communications among highly mobile workers presents a paradigm shift, according to General Magic and its allies.

"In the current wired world, [communications] services are provided disjointly by a number of different vendors. They're saying this can be consolidated [behind their standard, Telescript], and if that happens, it will have a tremendous impact on the adoption of messaging technology, information access and information services throughout the consumer and business world," said Walter Ulrich, a director at Arthur D. Little, Inc. in Los Angeles.

While the first systems using General Magic's technology will probably be used in a stand-alone environment based on PC operating systems, Andy Hertzfeld, senior vice president and software wizard, said that in late 1994 the company hopes to build hooks for mainframes and local-area networks into Magic CAP and Telescript and after that plans to work with database vendors to build additional hooks.

Still, the vision of providing anywhere, anytime communications will "take us at least a decade and perhaps two biological generations," Porat estimated.

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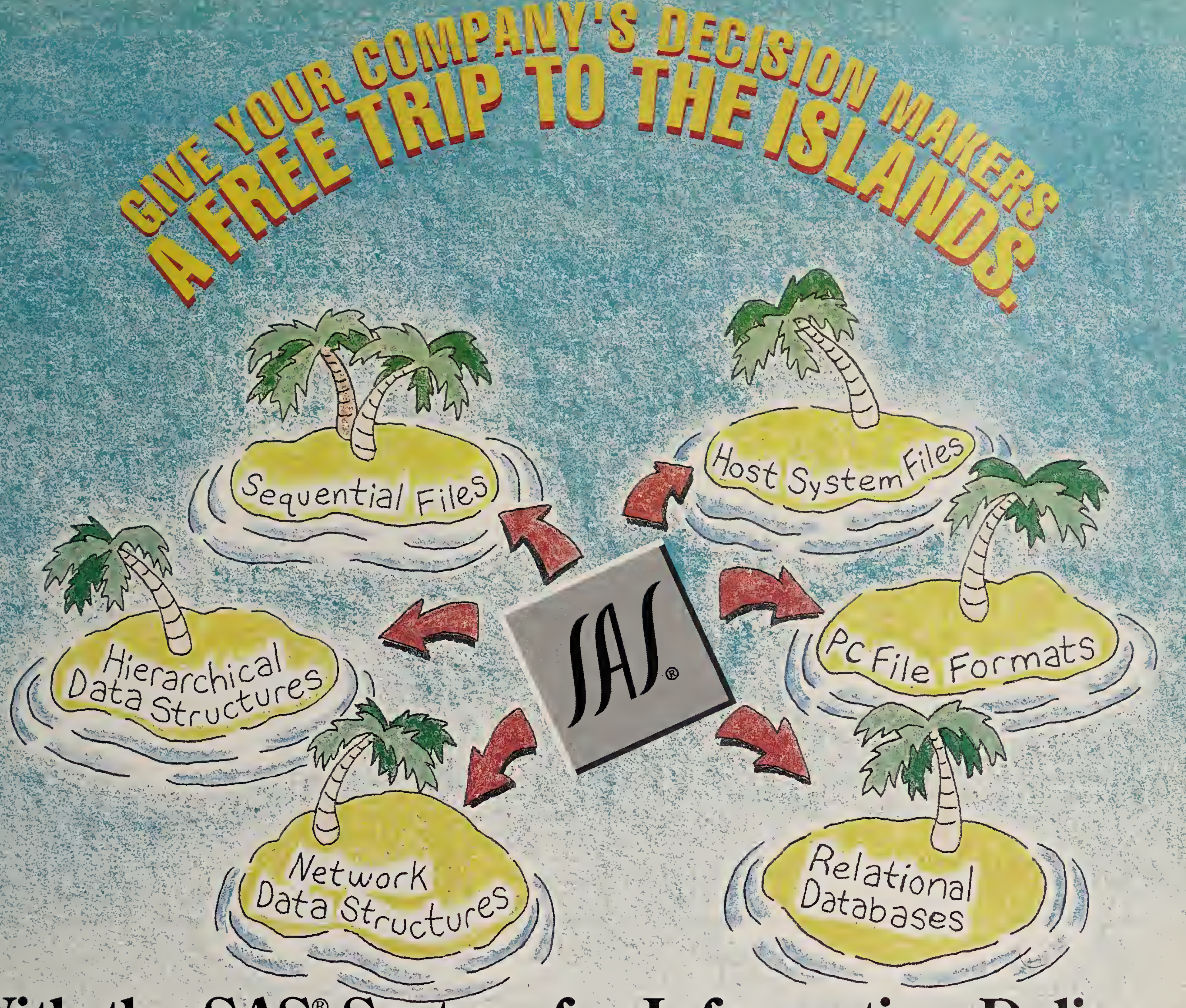

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# What's it gonna cost?

## Customers uncertain as IBM drops host price lists

By Johanna Ambrosio
NEW YORK

"Let the games begin." That was the reaction by most large customers to IBM's decision to introduce its new mainframes last week without list prices.

Users do not necessarily rue the passing of list prices that have become mostly meaningless during the past two years because of rampant discounting. But they said that negotiating with IBM without some sort of understood starting point will add some unwanted complexity, if not confusion, to their dealings.

Under the new "customer value pricing," IBM will negotiate with each user based on the total package of hardware, software and services needed [CW, Feb. 8]. And, unlike the current contractual requirement for many customers, users will no longer have to sign nondisclosure agreements on pricing.

"List prices have become irrelevant," said Bill Dean, director of technology management services at Pepsico, Inc. in Purchase, N.Y. "This muddies the water a little bit, although not for very long. It will take us a little while to sort out what the real costs are, and then they'll have to decide what they want to do."

Tom Loane, IS vice president at Alamo Rent-A-Car, Inc. in Fort Lauderdale, Fla., agreed. "Let's not kid ourselves; there is a price. It's just harder to get, and it will just confuse people for a little longer."

Nicholas Donofrio, general manager of IBM's Enterprise Systems business, said that confusion was not the motivation. "We're not trying to pull the wool over anyone's eyes, but list prices are just not relevant in this world."

He added that IBM will accommodate customer requirements by listing prices of specific components on a customer-by-customer basis.

Donofrio said that instead of starting with list prices, IBM has for some time been working with its customers on a deal-by-deal basis. "People say, 'I have these many millions of dollars, and I need this much stuff. We quit when you give me all of that for all of this,' " he said.

Analysts and others said this new tack is an attempt to stem the revenue erosion in a slow-growing mainframe business and to inject a bit of confusion into the bidding process for rivals Amdahl Corp. and Hitachi Data Systems Corp. (see story below).

Another motivation is perhaps to disguise some of the extreme price changes expected by the end of the decade, when IBM switches over to a wholesale System/390-based parallel processing architecture (see story right). At that point, prices are expected to be about one-tenth of the most recent mainframe list prices, and IBM needs to find a way to get there .

### Not any cheaper

Reports from the UK, where this customized bid system has been in place for at least a year, are mixed. "The clever users have been paying what they would have been paying," said Barry Graham, a consultant at Xephon Group in Newbury, England, who tracks actual prices paid by European customers. "Other users, who are not quite as aware, have paid more money. Nobody has paid less."

According to some users, however, no one has paid more under the new structure.

"Of course there are winners and losers, and some people will negotiate better than others, but I don't believe anyone has paid more for a product as a result of the policy," said Alec McHale, current chairman of the IBM Computer User Association in Hilford, England. Association members raised objections when IBM initiated the policy, he said, but concerns have subsided. "People shouted and screamed at first, but no one mentions it now. IBM has got good business morals and ethics and is not out to cheat the customer," McHale said.

On this side of the Atlantic, however, users are decidedly skeptical. "With all the discounts and mystery, buyers have always wondered if they could have done better," said David Moore, senior vice president at Mellon Bank Corp. in Pittsburgh. "Now we'll be comparing different things, and we'll see how it plays out. We'll learn as we go."

*IDG news correspondent Ron Condon contributed to this story.*

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Source: IBM

CW Chart: Stephanie Faucher

### On the horizon

Nick Donofrio, general manager of IBM's Enterprise Systems business, last week detailed how the firm's large systems will evolve.

- Donofrio vowed IBM will be the price/performance leader of all host vendors and will not follow the traditional 15% price/performance curves.
- By the second half of the decade, IBM will switch over wholesale to a much-less-expensive, 390-on-a-chip architecture for its parallel commercial computers. At the same time, he said, MVS and customers' applications will be brought over to the new architecture without users having to do any significant work themselves.
- In the meantime, he added, IBM will bring out specific targeted machines for market niches such as database access. The company's first parallel processing computer, a database query engine, will be introduced later this year, Donofrio confirmed; a transaction-processing implementation will follow next year.
- IBM will continue to add software to MVS and the mainframe family to enable it to play in the open systems and client/server worlds.

—*Johanna Ambrosio*

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# PCMs ready response as IBM shifts gears

By Jean S. Bozman
SAN FRANCISCO

For plug-compatible manufacturers Amdahl Corp. and Hitachi Data Systems Corp., the old game of beating IBM's list price is over: There is no IBM price book anymore.

"It is now mano a mano," said Jim Cassell, director of Gartner Group, Inc.'s large computer systems service. "They can't bid the software and services IBM can."

"The original idea of the plug-compatible manufacturer as a provider of a hardware alternative to IBM is still alive," said Bob Djurdjevic, president of Annex Research, Inc. in Phoenix and a long-time watcher of the plug-compatible market. "But it's going to be redefined, just as the mainframe has to be redefined."

Djurdjevic said vendors need to customize mainframes much as some auto makers allow customers to order customized cars before the vehicle is assembled.

From now on, the two IBM competitors — which together own 25% of the world mainframe market — will have to break out the components of an IBM-bundled bid to evaluate the hardware pieces separately, analysts said. They will have to deduce the street price of new IBM machines from reported sales to government agencies and from leasing companies that finance the IBM machines, noted Gartner Group analyst Mark Hess.

But, before any of the just-announced IBM mainframes ship, Amdahl and HDS will have to respond. Of the two, HDS — a joint venture between Japanese computer maker Hitachi Ltd. and Electronic Data Systems Corp. — is considered better prepared to ship comparable machines, although it made no announcement.

"They were ready to go in September," Cassell said. "They have had a lot of experience with their Japanese line of coprocessors for data compression and databases." That means HDS is ready to counter IBM coprocessors as they are shipped, Cassell explained.

Last week, Amdahl revised its product line; it will add four models in June and boost performance by up to 28% next month. It reduced the list price of its eight-way 5995-8650M from $30 million to $21 million.

Amdahl had beaten IBM to the punch with its eight-way machine, shipping it in September.

But Amdahl placed only about a dozen units around the globe — just about as many eight-way machines as IBM placed at beta-test sites worldwide, analysts said.

Amdahl also had manufacturing problems with 5995Ms last fall and lost months of lead time fixing them.

**Freeze**

Historically, IBM was able to "freeze" the mainframe market for months preceding a big announcement. Amdahl and HDS were forced to respond but often failed to ship product for a year or more. But IBM's recent troubles have changed the rules: Amdahl posted record fourth-quarter mainframe sales, and fourth-quarter sales of HDS mainframes eclipsed the firm's peripherals sales for the first time.

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# AT&T slaps rivals with lawsuit

## Seeks back damages for business lost to secret deals

By Joanie M. Wexler

WASHINGTON, D.C.

**A paradox in long-distance regulatory policy has reared its head in the wake of a lawsuit AT&T filed last week against competitors MCI Communications Corp., Sprint Corp. and WilTel.**

The interexchange market leader is suing the three carriers for back damages "in the millions of dollars," which AT&T claimed it could have gleaned in business during the past two years if all carriers had been forced by the Federal Communications Commission (FCC) to file tariffs on common carrier service contracts.

But while Joseph P. Nacchio, president of AT&T's Business Communications Services unit, said that "secret deals deny customers the advantages of competition," AT&T does not apply the same philosophy — nor does the FCC — to "enhanced" long-distance services. Such services include X.25, emerging frame-relay and Asynchronous Transfer Mode (ATM) networks, where the carrier adds some value to or manipulates networked data.

In fact, at a *Computerworld*-moderated session on frame-relay pricing at the recent Communication Networks Conference and Exposition '93, AT&T was the only carrier that refused to price publicly a mock frame-relay bid on a component-by-component basis [CW, Feb. 8]. AT&T is also the only long-distance carrier that requires enhanced-service customers to sign nondisclosure agreements.

This is because "we prefer to come and assist users in designing networks rather than just giving them price lists," Kevin Brand, frame-relay product manager, said at the session. The same policy will be in place when AT&T's ATM service kicks in next year, AT&T said.

Users were divided in their opinions as to whether opening up price lists would benefit customers. Some said posting prices would result in the natural price-lowering effects of competition. Others said secret deals give them more negotiating power.

"Deals should be kept secret. Why would I want someone to know what I did if it was giving me a competitive advantage?" said John Faccibene, vice president of telecommunications at Garban Ltd. in New York.

"We're seeing a paradox because of the way [two separate] markets are defined by the FCC, which really no longer makes economic sense," acknowledged AT&T spokesman Bob Nersesian. "We'd be open to both markets being deregulated or regulated, but until then, everyone should follow the rules."

The AT&T suit follows a Nov. 13, 1992, ruling by the U.S. Court of Appeals that all common carriers must file tariffs for basic interstate transport services in accordance with The Communications Act of 1934. The FCC, however, has required only AT&T, as a dominant carrier, to file tariffs since its 1984 divestiture.

"AT&T has said, and the court has agreed with them, that the FCC had no statutory authority to allow that anomaly to occur," said Brian Moir, legal counsel to the International Communications Association user group in Dallas. "Clearly, AT&T has the leeway" to seek retroactive damages, he said.

MCI, Sprint and WilTel brushed off the lawsuit as an AT&T attempt to cling to market share in the face of stiff competition.

# Financial applications to do battle

By Kim S. Nash

Dun & Bradstreet Software and PeopleSoft, Inc. set delivery dates last week for the next wave of their client/server financial applications, invigorating a horse race started with initial product shipments last year.

But being first out of the gate matters less than the functionality delivered over the long haul, users and analysts said.

The stakes continue to climb with financial application product plans from new entrants such as San Francisco-based Walker Interactive Systems and deliveries from established vendors such as Oracle Corp.

"Everyone's under the gun to follow through on ship date promises, but the real battle is about functionality," said Clare Gillan, an analyst at International Data Corp. in Framingham, Mass.

The two companies' timetables for releasing the next wave of packages are roughly similar.

PeopleSoft already has a mainstream financial module — general ledger — installed at user sites, while D&B Software has thus far shipped a decision-support module.

Timing is nearly everything for at least one division of Ontario Hydro, a large utility in Toronto, where an internal battle is brewing over whether to go with D&B Software or PeopleSoft products.

While the utility's Energy Management branch enthusiastically backs PeopleSoft's general-ledger package, other larger groups in the utility have "invested heavily" in D&B Software's mainframe-based Millennium line, "and the corporate tide is leaning toward a complete D&B client/server solution down the road," said Jeff Goddard, financial systems project leader. He said those divisions are more comfortable dealing with a vendor they know — in this case, D&B Software.

Indeed, customer loyalty does play a role in software acquisition. If D&B Software's mainframe applications are entrenched at a company, the company will likely look at D&B's client/server goods first, according to Gillan. "That definitely works in D&B's favor," Gillan said.

### On the way

**D&B Software**

**April:** FlexStream, a human resources-related tool.

**June:** SmartStream Decision Support 2.0; FinancialStream, a set of standard finance modules.

**Prices:** SmartStream: $73,000; others not available.

**PeopleSoft**

**Q2:** PS/Accounts Receivable, PS/Accounts Payable.

**Q3:** PS/Asset Management.

**Prices:** $100,000 to $300,000 per module.

# APPN tackles TCP/IP

CONTINUED FROM PAGE 1

trast with the current APPN, which can lose sessions before it has a chance to redirect traffic to a backup route, according to Don Czubeck, president of Saratoga, Calif., research firm Gen2 Ventures.

Further down the line — by 1995 — IBM plans to offer APPN++, a gigabit/sec. multivendor protocol that will support Asynchronous Transfer Mode (ATM)-based networking, Peters said.

IBM is doing research into "combining variable and fixed-cell benefits" — i.e., the advantages of frame relay and ATM — according to Warren D. Sovereign, IBM consulting support representative.

**The current APPN protocol might give TCP/IP a run for its money among users who need to minimize traffic on their internetworks, according to Don Czubeck at Gen2 Ventures.**

IBM has also been working on an ATM switch for more than a year and plans to offer ATM switching about the same time as vendors such as Cisco Systems, Inc. — creator of APPN rival Advanced Peer-to-Peer Internetworking — and Cisco partners AT&T and StrataCom, Inc., McGee said.

APPN+ will be positioned as an easy, intermediate step to ATM, McGee said. Unlike ATM, migration to APPN+ requires no hardware upgrade, he added.

While ATM as an architecture can support TCP/IP or any other networking protocol, IBM is working with the ATM Forum to implement some APPN-based features, such as multinode resource directories in ATM, McGee said.

The current APPN protocol might give TCP/IP a run for its money among SNA users who need to minimize traffic congestion on their internetworks, Czubeck said.

While TCP/IP works fine on an uncongested network, one application can gobble up most of the bandwidth, killing everyone else's response time, he added.

APPN today guards against this happening and also prioritizes which applications get the most bandwidth, Czubeck said.

3M Co. may use APPN as one of its primary worldwide internetworking protocols, according to Kevin Maher, a lead analyst at the St. Paul, Minn., manufacturer. "TCP/IP's connectionless environment can be a problem, particularly for our international sites that are just starting to scale up their LAN applications," he said. "When a [TCP/IP] link gets overloaded, it starts throwing away frames" of data.

3M also likes the directory services that enable an APPN network to "take care of itself in terms of dynamic path [definitions] and finding resources," Maher said. TCP/IP lacks these features.

However, "TCP/IP is our current platform for multivendor interoperability," Maher said. "Time will tell how well APPN is accepted."

Rather than force users into an APPN straitjacket, IBM is developing MultiProtocol Transport Network software that will enable applications written to network protocols such as TCP/IP and NetBIOS to ride on top of an APPN backbone, McGee said.

However, all this may be too little too late to prevent some SNA users from defecting to TCP/IP.

"SNA will probably be on our network for another five or 10 years just because our legacy mainframes will be there, but [APPN] is not part of our strategic direction at this time," said John Bubb, a senior engineer at Southern California Edison Co. in Rosemead, Calif. "We're encouraging more conversion at the desktop to more prevalent open standards, such as TCP/IP."

*Senior editor Joanie M. Wexler contributed to this story.*

### Prepped protocols

*Here is a rundown of how APPN and TCP/IP compare on key internetworking criteria:*

**Effective addressing for large networks:**
- APPN: Yes.
- TCP/IP: Coming in future release.

**Congestion control; class of service prioritizing:**
- APPN: Yes.
- TCP/IP: No.

**Dynamic rerouting around network failures:**
- APPN: Future release.
- TCP/IP: Yes.

**Multivendor support:**
- APPN: IBM, 3Com, CrossComm Corp. and Netlink, Inc. have license; Novell, Inc. and Systems Strategies, Inc. have formally committed to supporting.
- TCP/IP: Near ubiquitous support.

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# DEC nears mixed VMScluster support

By Melinda-Carol Ballou

MAYNARD, MASS.

Digital Equipment Corp. is ahead of schedule in its efforts to provide mixed VMScluster support, but several holes remain, according to analysts and users.

DEC users seeking to bring in Alpha AXP machines with VAXs on VMSclusters will be able to do so when the company ships OpenVMS AXP Version 1.5 in May. This will help many sites make a smooth transition to Alpha and gain performance and consolidation advantages.

By deploying Alpha AXP systems that are three to four times faster than their comparably priced VAX predecessors, users will be able to consolidate the number of DEC systems running at their site. However, they will initially be restricted in what they can do and in how they can configure the mixed clusters.

### Some restrictions

For example, in the new release, VAXs will not be able to access Alpha tapes and vice versa; cross-architecture booting is not possible; and, as expected, volume shadowing and disk striping will not be available until later — by year's end at the earliest, according to some sources.

Fiber Distributed Data Interface (FDDI) support will also be unavailable in this release. While cross-booting and lack of cross-tape access are annoying, the lack of volume shadowing and FDDI support is more critical for large sites that run production applications across clusters.

These and other restrictions likely to be announced were specified in confidential DEC documents distributed to partners last week.

### What it will have

According to those documents, OpenVMS AXP Version 1.5 will offer the following clustering capabilities:

- Under the company's Computer Interconnect protocol, OpenVMS AXP 1.5 will allow a maximum of three DEC 7000/10000s in a VMScluster with a maximum of eight VAX and Alpha AXP systems in a mixed-mode cluster.
- Up to two Computer Interconnect adapters and a maximum of one Star Coupler for linking HSC storage devices to the cluster will be supported. This initially limits the number of systems in the cluster as well as the number of available disk forms.
- Under the company's Digital Systems Storage Interconnect (DSSI) protocol, users will be able to deploy clusters that consist of either one or two VAX systems or DEC 4000 AXP hosts for a maximum of three systems per DSSI cluster. Customers will not initially be able to build DSSI clusters around the high-end 7000s or 10000s, however.

DEC 3000s are not directly supported in VMSclusters, but up to 12 DEC 3000 satellites can be attached to the cluster over Ethernet. For users seeking to bring the lower cost DEC 3000 AXP systems directly into a cluster, such as Stephen Tihor, assistant research scientist at New York University, this initial restriction is somewhat burdensome.

### Beat the clock

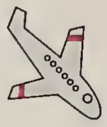
Even so, Tihor said he is generally satisfied with the initial capabilities expected from DEC and said the company is beating its product schedule.

"They are meeting reasonable limits of what they are able to test and certify to handle core customer needs," Tihor said.

Both analysts and users were positive in their assessment of DEC's progress.

"While there's still a slew of restrictions here and a few administrative headaches, they've done a fine job of getting it out earlier," said Chris Christiansen, an analyst at IDC Financial Services Corp. "Mostly, people will be installing Alphas in ones and twos and won't be anxious to add many [machines] right away."

A DEC spokeswoman refused to comment on the details but said the porting process for clusters is ahead of schedule.



**American Airlines will bring in Alpha machines only in a limited context until full VMScluster production capabilities are available, according to one systems analyst at the company. "We need high availability products to come out before we put them into our production environment," he said.**

# Aggressive push targets PCs

It is not just the Unix market that will see a more aggressive DEC. Last week, Enrico Pasetori, recently appointed vice president of DEC's new PC business unit, said the company will push harder to reduce production costs and broaden the PC product line and distribution.

"DEC has made a number of stupid starts because top management [at that time] did not seriously believe in PCs," he said. "We need a focused product strategy."

DEC, which nonetheless has managed to move from 22nd place to ninth place in terms of PC sales during the last year, hopes to secure the No. 5 slot by the end of the next year, he said.

Toward that end, DEC will soon be shipping PCs equipped with Intel Corp.'s Pentium processors — a family of Extended Industry Standard Architecture- and XT/AT bus-based systems — as well as PCs that are Alpha AXP-based systems. But Pasetori said he thinks the relationship with Intel ought not to be viewed "antagonistically."

While Pasetori's organization will initially be responsible for the Intel line, it seems likely that the Alpha PC running Microsoft Corp.'s Windows NT will ultimately come under his umbrella.

The delay in shipment of Intel's Pentium may boost Alpha's prospects, according to Randy Guisto, senior analyst at WorkGroup Technologies, Inc., a market research firm in Hampton, N.H. But DEC has to do a better job of getting the Alpha message across to an Intel-oriented PC audience, he said.

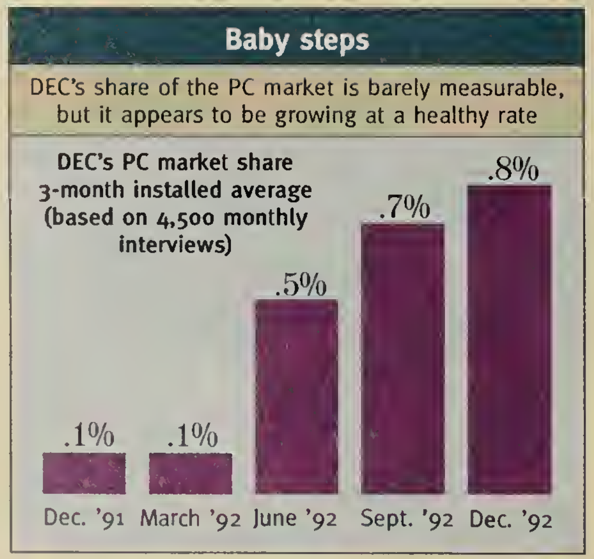
Doing that will be a key goal for Pasetori, who will also push the establishment of new distribution channels for the company.

Cutting manufacturing costs is another area of focus.

But foremost, Pasetori will seek to "play by the rules" of the PC market and succeed in that sphere on its own terms.

"If, in addition, you have something better to offer [than competitors do], such as distributed computing, then you can bring that in," he added.

*—Melinda-Carol Ballou*



Source: Computer Intelligence PC Market Monitor

# DEC dishes out Unix to serve technical users

By Maryfran Johnson

MAYNARD, MASS.

**Digital Equipment Corp. put its best face on a beleaguered Unix strategy last week, vowing first to reawaken the interest of the scientific and technical community and then to persuade commercial customers to buy its DEC/OSF/1 "Unified Unix" on Alpha AXP hardware.**

The company's three-headed operating system strategy will offer all customers a choice of OpenVMS, DEC/OSF/1 or Microsoft Corp.'s Windows NT on Alpha AXP platforms.

Emphasizing the growth path and longevity of a 64-bit Unix operating system running on Alpha's 64-bit processor, company officials said this 64-bit story will give the DEC product line a compelling edge over competitors.

William Strecker, DEC's vice president of engineering, characterized Unix as "the major growth opportunity for DEC" and said early users of DEC/OSF/1 on Alpha have been pleased with the "robustness and commercial quality" of this new Unix version.

"There is a good deal of user interest [in the OSF/1 systems] because of their power and portability," said Kurt Reisler, chairman of a Unix special interest group in the Digital Equipment Computer Users Society. "The port to 64-bit isn't that difficult since there are tools that point out the stupid [inconsistent] things done with the code. But users are concerned about whether they have the money to buy the new hardware."

### Targets three areas

DEC's Unix product strategy is geared to three areas: scientific and technical computing, client/server workgroup computing and distributed production applications in commercial accounts.

For Intel Corp.-based platforms, DEC will continue to offer The Santa Cruz Operation's SCO Unix (see story at left).

For an estimated 100,000 users of DEC's Ultrix Unix variant, however, migration to the Alpha platform running DEC/OSF/1 is virtually their only choice for moving forward with the vendor.

Late next month, DEC will begin shipping DEC/OSF/1.2 on Alpha AXP workstations, but there are no firm commitments for providing that Unix version on the current DECstation/DECsystem line, which is based on Mips Technologies, Inc. processors. The DEC/OSF/1.0 release runs on the DECstation line now.

DEC said it will try to ease the transition from Ultrix to DEC/OSF/1 by offering a range of tools, including binary code translation tools.

Company officials also said they would introduce an Alpha AXP workstation this quarter in the $5,000 to $10,000 price range.

"We've heard the commitment. Maybe a year from now there will be a credible story," said John Jones, an analyst at Salomon Brothers, Inc. in New York.

*Senior writer Melinda-Carol Ballou also contributed to this report.*

# OSF restructures as firms cut back

CONTINUED FROM PAGE 1

sources in engineering and business management into a new business unit called Interoperable Technologies, which covers the Distributed Computing Environment (DCE), Distributed Management Environment (DME) and the Motif graphical user interface. An Operating Systems unit was also created for OSF/1 and its interface to the next-generation microkernel.

"We're asking them to run [the OSF] like a business," said Mike Saranga, president of the OSF board of directors and IBM's assistant general manager of systems, structures and management. "This will be a little bit leaner organization, getting products to market faster."

Saranga said the abrupt removal of the COO job, established only three months ago, was no reflection on Bard's abilities. "We brought in the COO, but it was just the wrong time and the wrong place," Saranga said. "We made a mistake."

**No time to waste**

Users familiar with the OSF's operation viewed the management restructuring in a hopeful light but stressed the importance of the OSF getting its technologies into users' hands as soon as possible.

"I think this [restructuring] will aid the communication flow among the interoperable technologies so that DCE and DME will be as integrated as they can be," said Ted Hanss, president of the OSF's end-user steering committee and director of the University of Michigan's Center for Information Technology Integration in Ann Arbor.

Before the changes, the engineering groups and business-area management teams had separate and sometimes conflicting missions. The DCE and DME groups, for example, were each developing different security services for their respective products — with no guarantees they would work well together.

"A lot of end users have been saying it was time to stop this playing around and get the security models integrated," said Tony Carrato, a member of the OSF's end-user steering committee. "One hopes this gives them the opportunity to do that now."

Project management teams for DCE and DME will be reporting via one management stream to Jeanette Horan, vice president of interoperable technologies.

OSF/1 engineers and business managers will report to Roger Gourd, vice president of operating systems. Microkernel work will remain with Ira Goldstein, vice president at the OSF Research Institute.

## Under pressure

Still unsettled after months of debate, 1994 funding for the OSF must be resolved by the end of this month or key software development could suffer, OSF board members said last week.

"There is tremendous pressure to close on this," said Kurt Friedrich, an OSF board member and general manager at Hewlett-Packard Co.'s open systems software division.

That pressure comes mainly from the outside contract work — under way now at IBM, HP, Tivoli Systems, Inc. and others — on the DME technologies.

Since its 1988 founding, the OSF has relied heavily on contributions from its six key sponsors: IBM, HP, Digital Equipment Corp., Hitachi Ltd., Siemens/Nixdorf Information Systems, Inc. and Groupe Bull.

But now that the sponsor companies are struggling through tough economic times, the "one price fits all" model holds little appeal.

One budget proposal under consideration would allow sponsor financing to count as royalty "prepayments" on OSF technologies. "Instead of just giving them money to do what they want, we'd say, 'Here's $X million to cover my OSF/1 royalties,'" Friedrich said.

*—Maryfran Johnson*

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## News Shorts

### CC:Mail gains Unix connection

**Lotus Development Corp.** last week began shipping new software for connecting its CC:Mail electronic-mail package to the Simple Mail Transport Protocol (SMTP) used in Unix-based mail systems such as Internet. CC:Mail Link to SMTP Version 2.0 still requires a dedicated DOS-based PC, which does not have multitasking capabilities, but Lotus said the new version was written so it can send and receive mail simultaneously.

### HP expected to expand SNA links

**Hewlett-Packard Co.** is expected this week to announce Release 2 of the HP SNAplus family of products that connect Unix-based HP business systems, servers and workstations to IBM Systems Network Architecture (SNA) networks. SNAplus Release 2 enhancements include support for Token Ring and SNA over X.25 connections and support for IBM 3270 Motif interface.

### New president at Epoch Systems

**Epoch Systems, Inc.,** purveyor of network data management systems and software, last week named Robert Davoli as its new president, replacing Christopher Robert, who is leaving to pursue private investment opportunities. Davoli was previously co-founder and president of **SQL Solutions, Inc.,** a supplier of tools and integration services for relational database management systems.

### NetWare Lite revamped

**Novell, Inc.** announced NetWare Lite v1.1 for DOS and Microsoft Corp.'s Windows, a new release of its peer-to-peer, local-area network operating system. The new release adds full support for Windows 3.0 and 3.1. This mean users will no longer have to exit to DOS to perform network management functions. The new release, available now, also adds Single Network Login, allowing users to access shared resources via a single Login from any connected workstation.

### NetWare manager enhanced

Novell also announced Version 1.1 of its NetWare Communications Services Manager, its Windows-based communications management application. NetWare Communications Services Manager manages multiple NetWare servers for NetWare-to-IBM host or remote communications services. The new release, available now, can run with Novell's NetWare Management System or as a stand-alone application.

### Sequoia suffers more losses

**Sequoia Systems, Inc.** announced more losses for its second fiscal quarter, which ended Dec. 27. The company's net loss was $19.6 million, compared with a net income of $2.5 million for the restated 1992 comparable period. These results include a restructuring charge totaling approximately $15.2 million. Excluding the restructuring charge, the loss was roughly $4.4 million.

### Spanning the spectrum

**SHL Systemhouse, Inc.** said it signed a multiyear transitional outsourcing pact with **Computerland Corp.** The deal calls for SHL Systemhouse to take over Computerland's mainframe processing and to migrate the computer reseller to a client/server system. Terms of the deal were not disclosed. Meanwhile, on a different end of the computing spectrum, SHL Systemhouse said it will provide supercomputer processing as well as network operations for HPC High Performance Computing, a Canadian supercomputing consortium.

# Client/server caveats

CONTINUED FROM PAGE 1

and most are still in the beta-test phase.

For example, while OS/2 is a multitasking, multithreading operating system that supports Windows applications, it is currently too large and unwieldy for most end users.

Meanwhile, as a server, it is tied to Intel Corp. platforms and lacks high levels of security, symmetric multiprocessing and multiuser support. Most of these issues will be addressed by Portable OS/2, which is scheduled to go into beta testing sometime midyear.

Unix, meanwhile, has made significant strides in terms of ease of use for end users, but it does not support Windows. Moreover, most implementations require users to have a significant amount of systems management knowledge and do not currently support robust recovery or have a journaling mechanism to recover data lost in a system crash.

To circumvent this issue, most client/server applications built using Unix rely on the database to maintain data integrity on the server.

**NT enters the fray**

Challenging OS/2 and Unix will be Windows NT, Microsoft's high-end distributed operating system aimed at client/server applications. And while both OS/2 and Unix currently maintain an edge in terms of availability, NT was designed to be a highly portable, multitasking, multithreading, multiuser operating system that will reportedly support high levels of security, journaling and recovery, as well as symmetric multiprocessing.

Meanwhile, to ease conflicts associated with developing applications for both Windows and Windows NT, many developers have been focusing on a subset of the Win-32 Software Developer's Kit that will allow an application to run in 32-bit mode on NT and 16-bit mode on Windows 3.1, said Dave Solomon, president of Solomon Software Technologies, a Nashua, N.H., consulting firm.

The trade-off to this approach, however, is that developers have to go back and add support for multithreading and security to their 32-bit application at a later date, said John Calahan, chief executive officer at Timeline, Inc., a supplier of financial accounting software in Bellevue, Wash., that is developing Windows applications.

**Making do for now**

In the short term, developers are either working with beta-test versions of NT or plowing ahead on projects focused on versions of OS/2 2.0 or Unix.

Among the companies making the move to one of the 32-bit options is Pepsi International in Purchase, N.Y., which is evaluating these operating systems for use with IMRS, Inc.'s Hyperion business reporting application. Pepsi will use Hyperion to link its bottlers to company headquarters.

Because Pepsi is heavily committed to Microsoft's SQL Server database, the company is leaning strongly toward Windows NT on both the client and the server.

According to Chris Kalish, program manager for technical support at Pepsi, having the same operating system on the client and the server will increase performance and simplify maintenance of the applications. Pepsi already has a beta-test copy of NT and will start evaluating competitive Unix proposals in the coming weeks.

Previously, Pepsi was committed to OS/2, but because Microsoft is now pushing Windows NT, the company has decided to move off OS/2.

Taking a course similar to Pepsi's is the 17th Judicial Court of Broward County in Fort Lauderdale, Fla., which has decided to standardize on OS/2 for both clients and servers. Broward County chose OS/2 because it is the only multitasking operating system available that currently supports Windows applications, according to network administrator Eric Lebow.

Regardless of which environment organizations decide to adopt, all three of the major 32-bit multitasking platforms have major issues to address before they become contenders for the next dominant platform for client/server applications.

### Where does your firm fit?

The transportation, communications and utilities industries appear to be moving fastest to embrace client/server computing, according to a survey of 1,606 IS managers conducted by International Data Corp. (IDC) in Framingham, Mass. Business services, health care and manufacturing firms were next. Laggards included wholesale/retail and financial services companies, according to IDC.

## Clarification

An article in the Feb. 8 issue of *Computerworld* said that MCI Communications Corp. had cut its frame-relay rates by 20% to 70%. The company actually cut prices by 20% to 30%; the 20%-to-70% range referred to savings users might expect with an MCI HyperStream frame-relay network compared with an AT&T leased-line network.

## DOS limitations problematic

IS departments struggling to build client/server applications are running right up against the limitations of DOS.

DOS imposes strict memory allocation on applications that, when exceeded, result in system crashes and data loss.

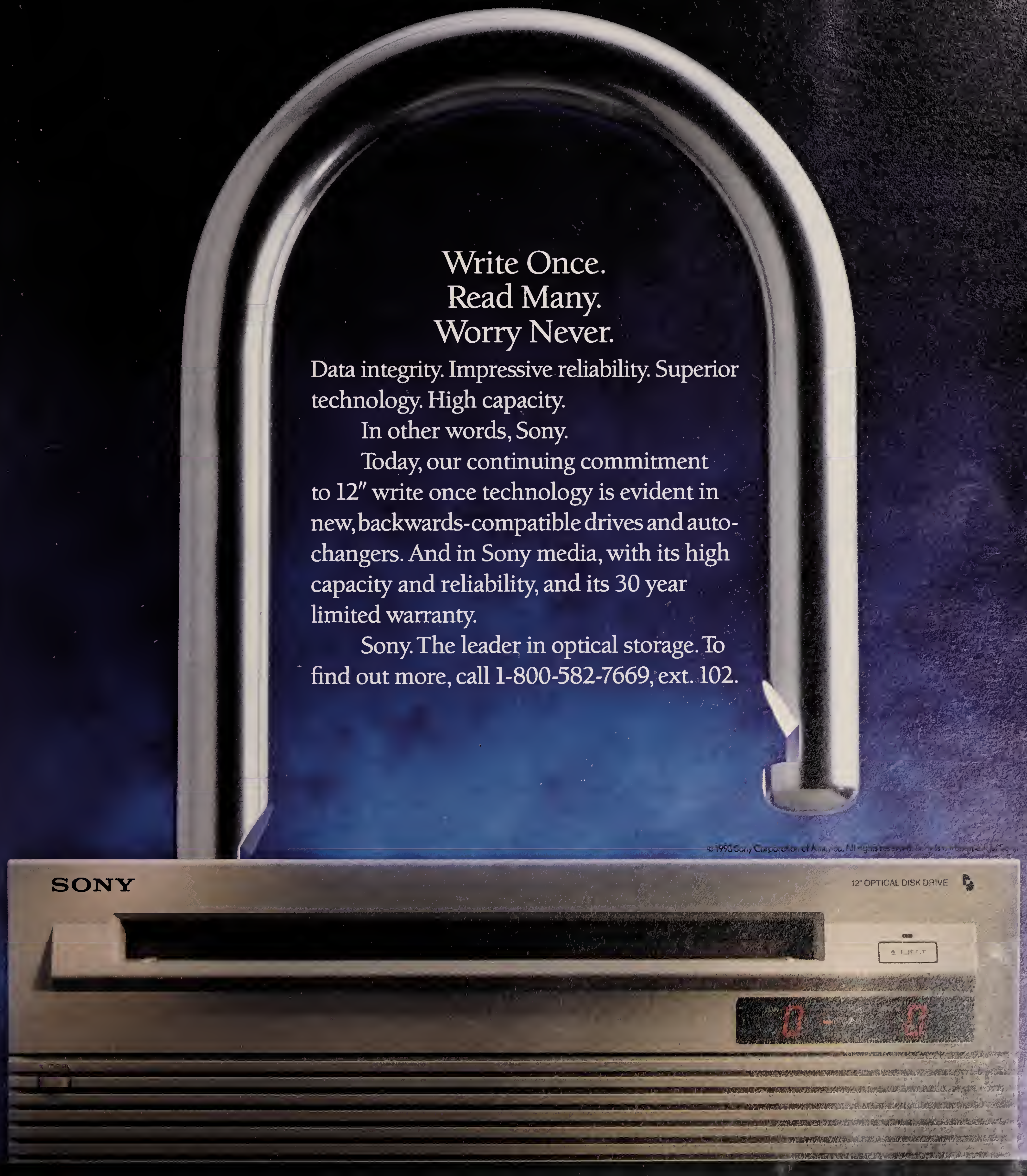
And although Microsoft has made substantial improvements to the memory management capabilities of Windows 3.1 and DOS 5.0, "there's a lot of kludgy stuff to get around when you're developing client/server applications with Windows. DOS just doesn't deliver multitasking and support for multiple I/O paths," noted Noah Ross, director of technical solutions at CAP Gemini USA, a systems integrator in New York.

"You have to remember that DOS has resource limitations, and every little button you put on a screen takes some of that resource," added Dana Bauer, product marketing manager at Powersoft Corp., a supplier of client/server application development tools in Burlington, Mass.

To shore up its Windows/DOS platforms, Microsoft is working on enhancing the memory management and compression capabilities of DOS 6.0 and is working to add some preemptive multitasking support in a 32-bit Windows implementation that will run on top of Version 7.0 of DOS.

*—Michael Vizard*

SONY



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*–PC Magazine, December 22, 1992*

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> *–PC Week, September 7, 1992*

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# Legent goes to flexible licensing policy

By Gary H. Anthes

BOSTON

Legent Corp. last week revealed flexible licensing options aimed at taking some of the pain out of contracting for software.

The formalization of Legent's software licensing policies comes on the heels of a similar set of announcements from Candle Corp., which two weeks ago revealed a set of flexible pricing and contracting options [CW, Feb. 8], and similar moves by Computer Associates International, Inc.

Saying it was simply codifying de facto policies, the Vienna, Va., company disclosed a set of price caps, claiming it will guarantee not to boost prices by more than 20% when a customer moves from one mainframe CPU group to the next. It also pledged, in one option, not to raise maintenance fees by more than 15% per year for a given license type and configuration. In a second option, increases would be set at a flat 10% per year.

Legent said it will embed a grace period in its authorization software so that users will have 30 days to resolve any administrative or billing issues when moving Legent software to a new environment.

Authorization codes, which can be used by a vendor to disable software in a dispute with a customer, will be eliminated within a year, President and Chief Executive Officer John F. Burton said at a briefing.

### Free license transfers

Burton said Legent will also guarantee a no-cost transfer of Legent products within a company — even across international borders — as well as to outsourcing vendors when only the original licensee is to be served by the product.

He also affirmed a willingness to offer site licenses and to write multiyear, enterprisewide contracts.

Observers said the policy manifesto carried real significance for some users.

"Only people who asked for [simplified licensing terms] got them heretofore," said Anthony Picardi, director of systems software research at International Data Corp., a research firm based in Framingham, Mass.

## New 'Endevors'

Legent last week said it will port its Endevor family of software management tools to Hewlett-Packard Co. HP 9000 computers.

It will be available in about one year, at the same time as a port to Sun Microsystems, Inc. systems will be ready. Prices have not been set.

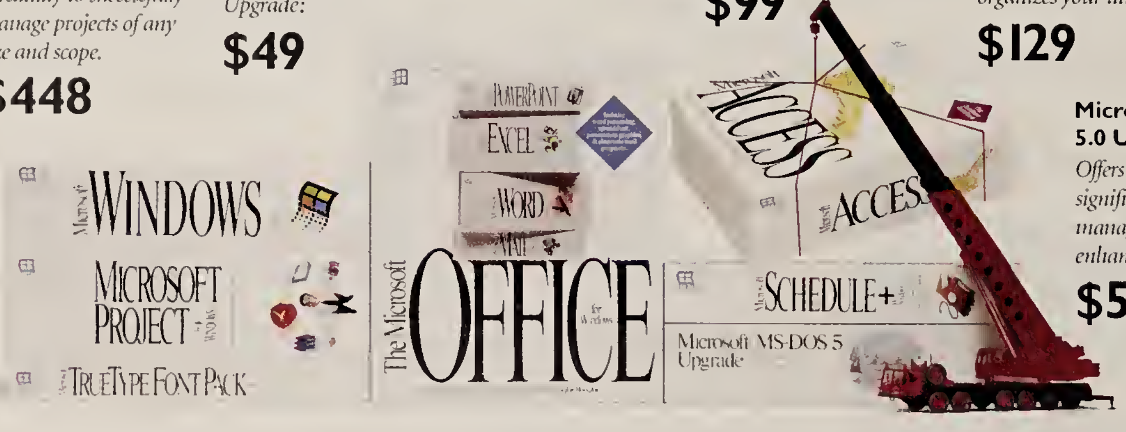
As part of the port, Legent and HP will integrate Endevor with HP's SoftBench application development framework, which provides a common interface to and communications among software development tools from HP, IBM, Sun and others.

"The HP announcement is important because we are in the process of looking at HP for a future generation of products from the bank. If those efforts continue positively, the HP Endevor product would be very interesting to us," said Salvatore Giordano, a vice president at Citibank/Citicorp, which uses Legent's Endevor on MVS.

Legent also said it will license the Tivoli Management Framework, an object-oriented environment for managing computer systems under Unix, from Tivoli Systems, Inc. in Austin, Texas.

The framework will aid Legent's development of products that comply with standards such as the Open Software Foundation's Distributed Management Environment and Unix System Laboratories, Inc.'s Distributed Manager.

*— Gary H. Anthes*



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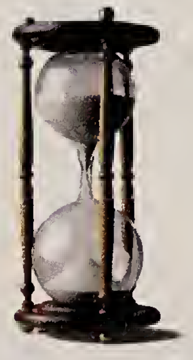

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# Mac slowly gaining corporate respect

## Apple has made great strides but is still struggling to meet the needs of users, IS management

By James Daly

Fans and foes alike say that while Apple Computer, Inc. has made significant strides improving the Macintosh's ability to function in enterprisewide computing environments, the company still desperately needs to turn lofty promises into viable products and do a better job of scoping out user needs.

"Apple is getting there, but they're not there yet," said Brian Connes, who supervises a mixed shop of Macintoshes and IBM PC clones as information center manager at DHL Airways, Inc. in Redwood City, Calif.

After a decade of paddling upstream against corporate enthusiasm for DOS and Microsoft Corp.'s Windows, Apple last year launched an intense game of catch-up to win the hearts and wallets of Fortune 1,000 customers.

To have a well-balanced offering, users said, the Cupertino, Calif., company needs to address major shortcomings in mixed-platform compatibility while improving interapplication communications and connectivity offerings.

The company also needs to open up its operating system, a sore point for users. "Apple is not in line with what is happening with open systems," one user said. "Mission-critical applications seem to be moving toward open systems, and I'm not sure Apple is there."

Apple's move toward open systems will not get under way until next year's introduction of PowerOpen, a version of Unix developed between Apple and IBM.

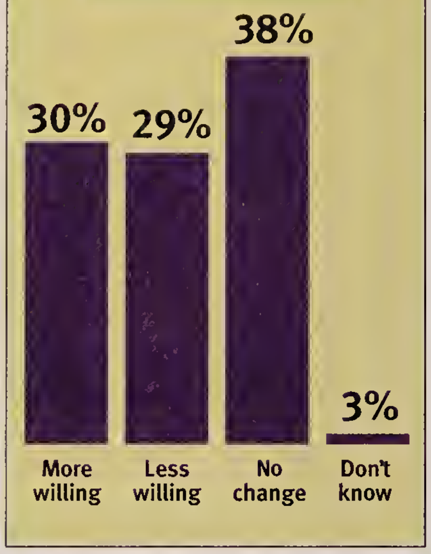
The result: In a recent *Computerworld* Database Division survey, less than 40% of the respondents — which included Apple and non-Apple users — said the company addresses the needs of the corporate customer. However, 62% said they feel more confident in Apple's ability to provide timely business-oriented products today than they did two years ago (see chart above).

**What's changed?**

Just as many IS managers are willing to invest more in Apple as are planning to invest less, a survey has found

**"ARE YOU MORE OR LESS WILLING TO INVEST IN APPLE PRODUCTS FOR MISSION-CRITICAL APPLICATIONS NOW THAN YOU WERE TWO YEARS AGO?"**

PERCENT OF RESPONDENTS (BASE: 118 IS MANAGERS)



Source: *Computerworld* Database Division

For its part, Apple does seem to be getting the message — it has just been slow to react. A server introduction slated for sometime during the next few weeks (see story at right) is seen as a step in the right direction, as was last week's update of the Quadra Model 800, which targets complex networking tasks (see chart below).

Apple gets the highest marks, however, for last year's release of its Virtually Integrated Technical Architecture Lifecycle document, an internally developed comprehensive blueprint for building a complete mixed-environment client/server architecture. "A lot of our folks have been scared off about going to client/server because there was no one there to show them how," said David Lustig, manager of technical services at Bose Corp. in Framingham, Mass. "Apple is showing us how."

The daunting challenges of client/server will provide a perfect Trojan horse for selling the Macintosh's traditional ease-of-use strongpoint into corporate America, said Morris Taradalsky, vice president and general manager of the Enterprise System Division.

### Addressing problems

But there are hitches. For instance, Macintosh users have long screamed for Apple to backfill its connectivity options.

Taking the hint, Apple moved to address its connectivity deficiencies last June by announcing a Token Ring extension for its Transmission Control Protocol/Internet Protocol (TCP/IP) connectivity package. Users said Apple needs to continue in this direction. "If Apple is going to start playing with the big boys, they've got to connect to everyone," said Rob McPhee, a development engineer at Wilmington, Del.-based Du Pont Co., who now links his Macintoshes into a TCP/IP network via public domain software.

Another bugaboo is interapplication communications. "I go through holy hell trying to have [Macintosh applications] interact with IBM apps," said one Apple critic. To rectify this, Apple has teamed up with Symantec Corp. to unveil Bedrock, a framework for building cross-platform applications. A beta-test version is expected in the first half of this year.

It is a move that has already been greeted with enthusiasm. "Apple needs to recognize that they have to coexist in an IBM-dominated world," said Frederick Morsheimer, information systems director at the South Pasadena, Calif., headquarters of the Trader Joe's Co. chain of 49 wholesale warehouses.

"We've come to accept the fact that most of the world is non-Apple; I'm not sure we always did," Taradalsky said.

Despite Apple's shortfalls, IS managers who have integrated the Macintosh into their mixed environments remain a singularly devoted breed, lavishly praising Apple's ability to innovate.

Moreover, Apple officials and Macintosh users said they feel that corporate respectability is within Apple's grasp. "We're not kidding anyone," Taradalsky said. "We've got our work cut out for us."

### Keeping users happy

Apple's much-ballyhooed co-development plans with IBM and Motorola, Inc. should yield additional innovative fodder for corporate customers. Key elements include their joint venture, Taligent, which has been charged with formulating an object-oriented operating system that will facilitate the development of custom enterprisewide applications.

## Overcoming prejudice

Morris Taradalsky, vice president and general manager of Apple's Enterprise System Division, spends much of his time trying to convince corporate America that the Macintosh and IS are not mutually exclusive. He has developed the following five-point plan for Apple to address IS needs:

- Kick off a line of servers with the introduction of a Motorola 68040-based model in the next few weeks. Attendees at next month's CeBit in Germany are expected to be the first to view Apple's new server. This product family will eventually be driven by the PowerPC chip under development by Apple, Motorola and IBM.
- Offer more cross-platform connectivity tools resulting from a recent interoperability pact with IBM. Early fruits already harvested include Apple's Data Access Language for the IBM Application System/400, an Internet router offered by Apple, and IBM support for AppleTalk in its OS/2 LAN Manager. Apple also plans a 3270 emulation product.
- Move toward open systems with the 1994 introduction of PowerOpen, a version of Unix developed by Apple and IBM that promises complete backward-compatibility with Macintosh applications. Apple's AUX currently enables Macintosh applications to run on top of Unix.
- Finish up the Apple Integration Architecture (AIA), Apple's grand scheme for multiplatform systems architecture interoperability. Early parts of AIA's larger whole are the Data Access Manager, which is already available, and the Open Collaboration Environment set of network services.
- Continued evolution of Vital, which provides users with a blueprint for designing a mixed-platform client/server system. — *James Daly*

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# Information technology patriot

*This week in Indianapolis, Butler W. Lampson will be named winner of the A. M. Turing Award, the highest honor given annually by the Association for Computing Machinery in New York. He was interviewed recently by senior editor Ellis Booker.*

*Currently a corporate consulting engineer at Digital Equipment Corp., Lampson was principal scientist and senior research fellow at the Xerox Palo Alto Research Center (PARC) in the 1970s and '80s. At Xerox PARC, Lampson and his colleagues pioneered in the building of distributed PC environments; high-performance, single-user workstations; graphical user interfaces; and a half-dozen other technologies now routinely used by millions of computer users.*

**Q: Some consider Xerox PARC's work seminal to the PC revolution. Is this reputation deserved?**
A: Well, naturally I think it is. The computer industry spent most of the 1980s making industrial-strength applications of the work done at PARC in the '70s.

**Q: At the time, did you think these ideas would become as pervasive as they have?**
A: Absolutely. We thought the obvious thing, and that was that everyone would want it.

**Q: Was there a grounding philosophy to the work?**
A: The whole idea was of [one's] own computer with an interface [resembling] pencil and paper. The driving conception at PARC was that computers are communications devices, not calculation engines. We needed the old-style computers in order to build the new ones.

It was a while before the Altos [PARC's PCs] were powerful enough to take over. We relied on a fake [DEC] PDP10. . . . We needed to build it ourselves because Xerox had just bought a competitor [to DEC's minicomputer business].

**Q: High-performance laser printing was another PARC innovation, yes?**
A: People often overlook the laser printing. We saw that as all part and parcel of the same thing. The game was a computer able to work with paper, just like in the real world. So the printer was just as important as the bit-mapped screen.

**Q: How about document imaging?**
A: We played with imaging . . . but didn't build any serious prototypes. In those days, it was reasonably difficult to muster the storage and computing power you needed.

**Q: Did you expect then that paper would "go away" by 1993?**
A: It's fair to say we were overly optimistic that all the information available on paper would be available on computer. It *is* happening but much more slowly than we predicted in 1975. We never thought paper would go away.

**Q: What about portable machines?**
A: One of the driving ideas behind the Alto was the Dynabook, which was conceived as a laptop. But we felt it was beyond our capabilities to engineer a device like that. So we concentrated on the software, with the expectation that the hardware would catch up. There was one attempt at PARC to make a portable machine. It failed because it was too big, too heavy and didn't have enough memory.

**Q: How about the mouse as an interface device?**
A: No, the mouse was invented by Doug Englebart, who directed the Augmentation Research Center at the Stanford Research Institute.

**Q: What about pen computing?**
A: I don't think anybody ever did serious work on pens. I think we were intimidated by the limitations of handwriting recognition, and that's still true. We did spend time on voice recognition. We definitely thought within 20 years we would have this. There wasn't work on wireless [computing]. Again, there's not much motivation if you don't have a portable machine.

**Q: What about voice recognition?**
A: In many ways it is a great input modality. Also, I think there's a fair amount of value in having the computer be able to read to you. [However], the charm of storing audio in the machine somewhat escapes me.

**Q: What else surprised you? What hasn't taken hold the way you had thought?**
A: Today, there still isn't one standard for inputting and printing a document on demand. I would have expected that to be pretty solidly accomplished by now. I do think this will happen; I do expect over the next few years there will be industrywide agreement on a format for documents in a computer, based on [Adobe Systems, Inc.'s] PostScript. [Xerox's device-independent document description language, Interpress (the direct precursor of PostScript) was developed at Xerox PARC by Lampson.]

MARK ALCAREZ

**Q: I've always wondered, why is the phrase "client/server" and not "server/client"?**
A: The emotional answer is that the client is much more important. The server is just a stupid box over in the corner. I think the people who developed that approach to computing definitely had that point of view — a focus on the desktop machine.

**Q: Were you surprised by how long it took for computer vendors to pick up the microcomputer mantle?**
A: Yes and no. It wasn't a surprise, since it's a normal thing that companies continue to do X instead of Y.

**Q: What enabling technology will have the biggest impact on the way people work and live in the future?**
A: My slogan is: The computer revolution has only just begun. The impact has just barely begun to be felt in daily life and across the economy. If you break the economy into sectors, you find that most of the technologies go back before World War I. Computers were invented in the 1940s but only really in the '80s began to have impact.

What's likely to happen under the general rubric of computing is that the publishing industry will go entirely electronic. It will be possible to get everything on-screen: the Library of Congress behind your screen. We're far away from this from a systems standpoint but fairly close from a component standpoint.

**Q: How important is multimedia going to be?**
A: My personal bias is the most important [piece] is still images. It's video that's flashy, [but] I think still images have the greatest value. Take the step from text and line drawings to still images. This first step is the biggest. Also, video is much more expensive to deal with and to source.

**Q: What about productivity? Studies indicate that for all the investments in information systems, office professionals are only marginally more productive today. Will future technologies change this scenario?**
A: That presumably means it wouldn't matter if we took away all of the computers. Does anybody believe that? I think these studies are bull, based on my reflections. I really think the people who generate these numbers should go back and answer my question.

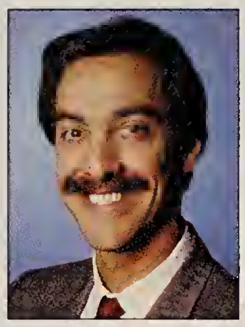
**Q: What should users keep in mind as they prepare for the future?**
A: They shouldn't allow themselves to be bulldogged by technology bigots. The job of the computer is to adapt to the user's convenience, not the other way around. The time to buy the next gadget is when you think it will help you do something you want or need to do, not because you just read an article saying it's the latest thing.

Editorial

# Bridge too far

A few years back I visited software developer SAS Institute, Inc., touring its programmers' bullpens, among other things. I was steered over to its advanced Unix programming group, where people with longish hair and Birkenstock earth shoes made it look more like a slice of Berkeley or Cambridge than Cary, N.C.

They carried out their development work on a plethora of high-performance workstations, all of which looked pretty similar. Except for one sleek, black beauty tucked in a corner, intentionally out of sight.



"That's my Next," this fella said. "It's an incredible machine," he noted, adding that he didn't mind if its existence was kept quiet, lest he have to share some of the valuable programming time on it. He remarked he'd never worked on anything quite like it.

So at least one person was greatly saddened by the news that Next is getting out of the hardware business (see story page 2), and no doubt there are many others. For company founder Steve Jobs, there are two lessons: First, it's really hard to have two independent successes in the computer industry (Apple being his first). Second, the inexorable force of hardware standardization has a downside that excludes innovative alternatives from the marketplace.

I suppose in the truest sense, this exclusion is vested purely in economic realities. To stay ahead of the game, chip maker Intel is pouring an amazing $2.5 billion into capital and R&D expenditures this year, better than 40% of last year's revenue. How can Next compete with the Intel standard? Now it knows it can't and will port its operating system to Intel platforms.

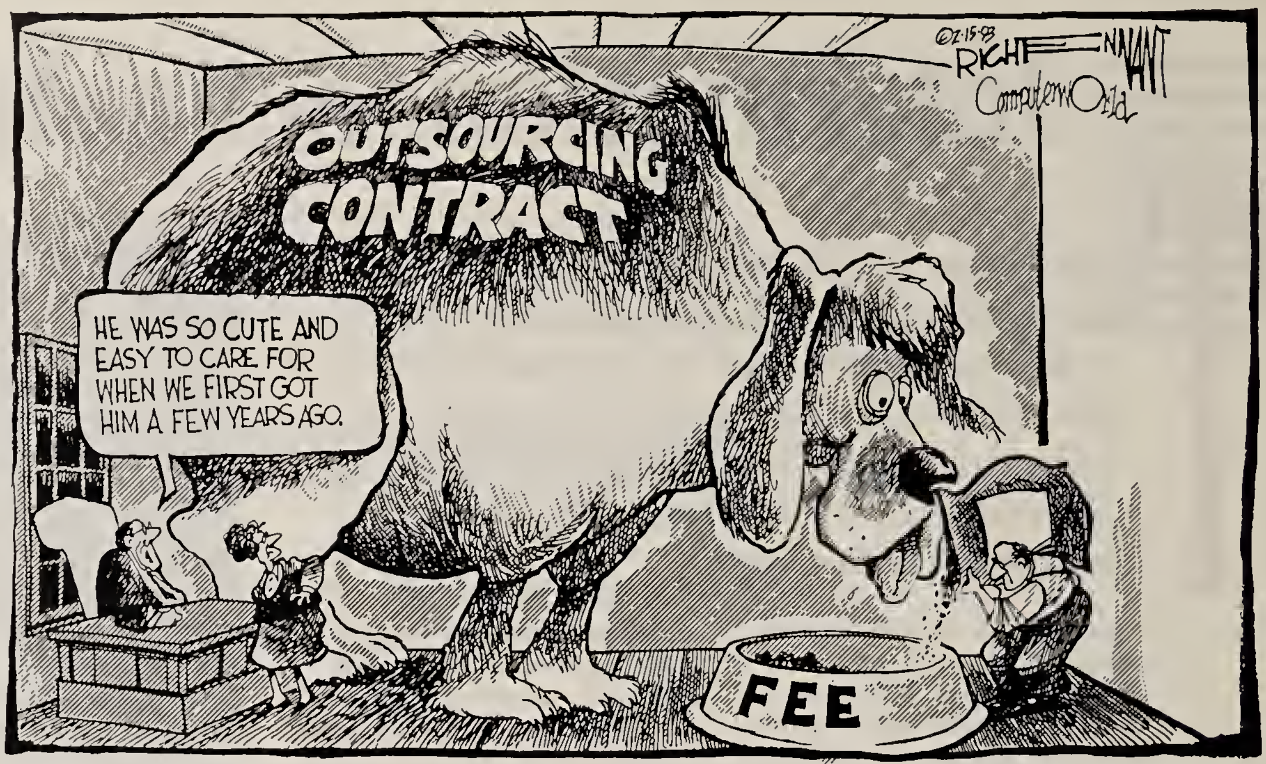
And downstream, PC makers such as Compaq and Dell are squeezing razor-thin margins from their wares, while the workstation makers are in the throes of their own low-ball price wars.

All this leaves no room for a premium-price, proprietary approach to desktop hardware, apparently irrespective of how good it is. Next's chief investor, Japan's Canon, has bought the hardware rights and maybe can revive Black Beauty. Good luck to them.

Some people might say that the Next machine was just one "bridge too far" for Steve Jobs and his bountiful ego. What it may end up representing is the last gasp of entrepreneurialism and individual idealism aimed at delivering some unique innovations to the desktop.

Bill Laberis

Bill Laberis, *Editor in chief*


OUTSOURCING CONTRACT
HE WAS SO CUTE AND EASY TO CARE FOR WHEN WE FIRST GOT HIM A FEW YEARS AGO.
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Letters to the editor

## More myths

"Question everything" [CW, Dec. 28, 1992/Jan. 4, 1993] was a correct article with a few exceptions.

The statement regarding the significant reduction in maintenance costs when using C/C++ compared with Cobol could not be further from the truth.

Another myth is that C/C++ is the only solution to downsizing and client/server problems. Downsizing and client/server applications exist today in a multilanguage environment. Microcomputer-based Cobol compilers, online transaction processor file systems and relational databases play a large role.

Still another myth is that graphical interfaces and object-oriented programming are unique to C/C++. Many other languages, including Cobol, have adopted these capabilities.

The world's data processing future is one where downsized, client/server graphical applications will remain mixed-language, multiplatform applications.

Given proper and well-managed development, each language and tool is used for what it does best in order to reach an acceptable solution to a specific data processing problem. No one product meets all development requirements.

Odds are that anyone putting all his eggs in C/C++ for downsizing, cross-platform and client/server applications either doesn't know any better or has been led to believe that there is only one solution to a problem.

*Michael L. Hicks*
*mbp Software and Systems Technology, Inc.*
*Alameda, Calif.*

## Ray of sunshine

I've always said that a big problem with the high-tech industry is a lack of humor. Just when winter is its darkest, along comes Joe Maglitta's commentary to bring on the laughter [CW, Jan. 25]. "Outsource for better living" had some gems. Here's my contribution: Checksourcing: Oh, do I hate to write checks. It's probably because I'm never quite sure what's in the bank account.

Hire someone to write checks, keep Quicken up-to-date, and even better, find me some money.

*Jean Young*
*Rockville, Md.*

## Losing out

After reading "Borland's crunch time" [CW, Feb. 1], I am compelled to respond by stating that it is perhaps the buyer who is ultimately winning as a result of Borland and Microsoft's DBMS price war, but it is the user who is losing.

In the Windows database market, I have talked to many users who find the Revelation Technologies' product, as well as products by other small database vendors, to be more in line with their requirements but who are being pressured by ever-tightening MIS budgets to go with "promotionally priced" products. From this perspective, I will not argue that the price wars have not been an effective marketing tool for these companies, but I will argue that they have not benefited the end user.

I have also seen some innovative database products, which were under development in small entrepreneurial PC DBMS shops, that never made it to market. Such developers could not afford to sell product at the nonprofit levels set by the price wars. Once again, the loss goes to the database user and developer communities.

The buyer is winning, but the user is ironically paying the price.

*Chris Miller*
*Revelation Technologies*
*Stamford, Conn.*

## Not laughing

The fact that "Easy as 1-OS/2-3" [CW, Jan. 11] was published as humor does a great disservice to a fine product. The article is full of misinformation and inaccuracies. True, there have been a number of problems installing and using OS/2 2.0, but this should be expected by anyone who has worked with any product's .0 release. I urge you to have your writers, when writing "humorous" articles, to stick to the truth.

Humor is fine when it stays within the realm of reality. But this article, published by what I used to consider one of the better computer publications, is not humor but trash.

*Jack Hiatt*
*Atlanta*

■ Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.

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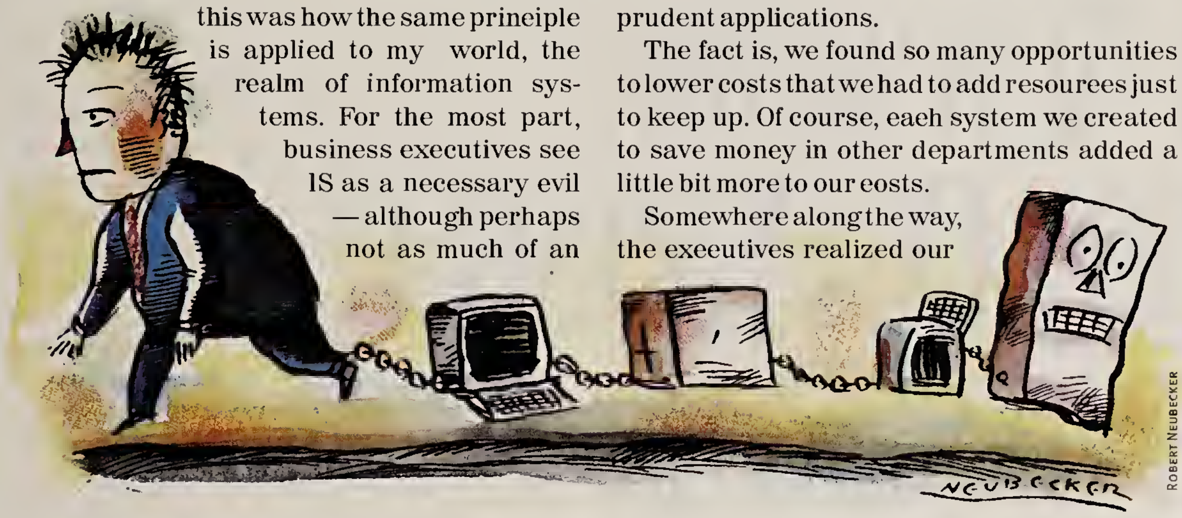
# Don't let IS become your CEO's ball and chain

## Rick Marshall

Have you ever heard or read something that didn't strike you at the time but hit you like a truck later? That happened to me the other day as I read about the fines General Motors has to pay for not meeting federal mileage, emissions and safety standards. In essence, GM sees these fines as a cost of doing business.

GM executives understand that with today's cost to build cars, it's cheaper to pay the fines than to meet the standards. So every time they plan their budgets, they take that amount off the top. It can't be returned to the shareholders, reinvested in the business or even passed on as a savings to customers. It's worse than my car insurance. At least if I have an accident I get something back.

What hit me when I started thinking about this was how the same principle is applied to my world, the realm of information systems. For the most part, business executives see IS as a necessary evil — although perhaps not as much of an evil as car insurance.



ROBERT NEUBECKER

This view persists despite all the effort senior IS managers have expended trying to get executives to see things differently. We point to how much competitors are spending on IS to persuade our leaders to spend more. We gnash our teeth every time the finance department tells us to cut our expenses. We deify consultants who prove that we create competitive advantage.

But even though some companies have created CIOs, when it comes right down to it, most IS departments are just another cost to be incurred on the way to doing whatever it is a company does.

Was it always that way? Seems to me there was a time when IS was an investment. We put dollars in and saved dollars elsewhere. We actually lowered costs of doing business through prudent applications.

The fact is, we found so many opportunities to lower costs that we had to add resources just to keep up. Of course, each system we created to save money in other departments added a little bit more to our costs.

Somewhere along the way, the executives realized our costs weren't going away. In fact, as our budgets increased, we started spending more just to maintain the systems we had and less developing new systems. Demand didn't slack off, so backlog grew, too. The IS department started becoming a bottleneck, sometimes even a cork. Is it any wonder senior management finds it hard to view IS as anything other than a cost of doing business?

So what do we do about this? Nothing. Don't whine about it. If there is one thing an executive can't stand it's a whiner — even if the whiner is the CIO. Instead of wringing our hands trying to describe how much we could accomplish if we had more resources or new technology, we have to focus on cutting costs.

Consider outsourcing anything you do that isn't strategic before top executives consider it. Give a dollar reason to invest in programmer productivity tools, CASE, lights-out operations and so on. Find the cost reduction of making infrastructure changes and tell them again and again and again.

Sooner or later, top executives will get the message. Someday they'll wake up and wonder why it never hit them before. Maybe they'll even look up to see who was driving the truck.

Marshall is director of information technologies at Ameritech Publishing, Inc. in Troy, Mich.

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# Software licensing: Let's go back to Square 1

## LISTEN UP! *by* Elaine Bond

Want to get an IS manager's attention? Just say "software licensing."

It may also be a good idea to practice ducking as you say it because this is a phrase that usually evokes about the same reactions as the word "politician" — scorn, distrust and hopelessness.

For corporate users of software, the licensing issue carries a host of unpleasant associations including lawsuits, eyestrain (those fine-print disclaimers), price inflation and endless procurement negotiations. All of this adds up to anger and frustration, and perhaps even more importantly, it tends to result in a disregard for contractual agreements.

Authors and creators have a right to make a profit. They need to be encouraged to take on the risks of developing and servicing their creations. They have a right to be protected from theft of their intellectual property.

The fact is, however, that current software licensing schemes aren't protecting vendors any more than they are satisfying users. This is because licensing practices have not kept pace with other changes taking place in the industry. Software is designed, delivered and used in very different ways now than it was even a few years ago. We need fresh thinking, experimentation, new models. And we need them fast because we can expect even more change in the future, when it becomes possible to move "objects" from node to node at will.

For the most part, today's practices have their origins in the mainframe mentality, which said that software that ran on bigger machines was worth more to customers. In earlier times that was true — or at least true enough. Greater speed did sometimes yield more throughput, and throughput was often valuable to customers. If the system was fast enough, the user could cut back on CPUs.

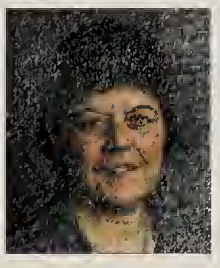
But more speed and the ability to run on a faster processor does not always translate into greater value. Besides, in this wonderful era of personalized, networked, distributed, portable and multiplatform computing, the old equations just don't work.

I have no illusions that creating these new models will be a cakewalk. Responsible users are willing to pay a fair price for perceived value. But perceived value is not very tangible or measurable, and therefore, not easy to determine or predict. Also, value will vary from customer to customer.

Does this mean everything will have to be based on individual negotiations? I hope not, because that route is almost certain to lead to the same kind of confusing mess we have now.

One thing we can do is try to get at some basic concepts about software types and potential service measures and then develop models from the practical combinations. For example, we could define different categories of software such as operating systems, distributed applications and personal-use products and create service measures that are countable and appropriate for each category.

In some instances, the appropriate service measure might be the CPU on which the software resides, but in other cases, it could be the number of managed devices, the number of transactions or the number of users.



There is no single answer to the software licensing issue, but at least by concentrating on important underlying concepts, the debate can be narrowed and made to focus on what matters most.

Bond is a Chase fellow and senior technology consultant at The Chase Manhattan Bank NA. She is a founder of the user advocacy group Open User Recommended Solutions, or OURS.

Commentary

Charles Babcock

# PC power plays

PC hardware is rapidly climbing the price/performance curve, but there are PC applications in the works that could easily gobble up available power. Today's memory-hogging, CPU-demanding application is tomorrow's Bud Light compared with the software to come.

Some of this new breed of software was on display earlier this month at Demo '93, a tire-kicking show for upcoming PC products held near Palm Springs, Calif. Although many of the products on view were still in development and could turn out to be desert mirages, some strong patterns were evident:

- Demonstrations repeatedly emphasized that what used to be done on specialized systems will soon be done on standard PCs at a much lower cost, albeit in somewhat truncated form.
- Powerful new personal productivity and decision-making tools that used to reside on hosts are being pushed onto PCs and thus closer to end users.
- Stand-alone desktop activities, such as creating and editing documents, are being converted into group activities with many simultaneous participants.

The most dramatic examples of PCs taking over jobs previously considered out of their league were in multimedia presentation. For the most part, combining voice, video and text has required too much CPU power and storage to make it feasible for more than training programs produced on large systems.

At Demo, however, applications on display used new compression techniques to break this barrier by reducing the amount of data processed. Apple's QuickTime, a Macintosh product that handles audio and video data through software with no hardware assist, ran on a Windows PC. ShareVision in San Jose, Calif., demonstrated how a phone line can transmit video and audio data to a PC for capture and manipulation.

One example of how decision support is migrating to the desktop is a 10,000-word English-language vocabulary from Natural Language in Berkeley, Calif., now available for Windows PCs. Equipped with a vocabulary of this size, a user can query a database without specialized knowledge of SQL.

In the meantime, complicated group tasks are simplified by new applications that adapt and expand the conventions of the graphical user interface. Watermark Software in Burlington, Mass., demonstrated how its document manager, Watermark, allows several users to simultaneously edit a document, drawing arrows to words or adding color-coded comments. The system organizes and separates these changes, treating each user's editing marks as if they resided on a separate acetate overlay.

Sheer technical power is being pushed closer to the end user with tools that simplify the development of challenging applications. For example, GainMomentum from Gain Technology in Palo Alto, Calif., makes it possible to generate an object-oriented application without knowledge of Smalltalk or C++.

Using this product, a user can prototype an application by viewing an object on-screen. The attributes of the object are captured in a properties screen, which can be colored, resized or otherwise modified and stored in an object database. Various editors allow text, graphics, audio or video to be added to the object, while a viewer allows the developer to go back through different versions, examining alternatives.

During the next 12 months, the average PC purchased is likely to be a Windows-based 486 PC with at least 8M bytes of RAM and 120M to 360M bytes of storage. By yesterday's standards, such hardware would be overkill. But judging from Demo's display, we'll soon have applications that not only can use, but deserve, that power.

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Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

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## In Brief

### On Atlas' shoulders

The task of marketing products and services in the still-diverse European Community (EC) may get a little easier with desktop mapping software that includes economic and demographic data for all members of the 12-nation bloc. **Strategic Mapping, Inc.** in Santa Clara, Calif., and the EC's statistical office, Eurostat, last month announced the release of Atlas Software: Eurostat Edition to help marketers spot business trends. Prices for the PC software start at $475.

### Slash 'n' earn

**SunSelect**, a business unit of **Sun Microsystems, Inc.**, announced price cuts ranging from 20% to 50% on its SunPC emulation software and hardware acceleration products. The Chelmsford, Mass.-based subsidiary also unveiled a new version, SunPC 3.1, which will ship next month. The SunPC software enables Sun workstations to run MS-DOS and Microsoft Corp.'s Windows. A single-user license for SunPC 3.0 was cut from $595 to $295, and the 25-user license was slashed from $11,900 to $5,900.

### Leaving security

**Xtree Co.** in San Luis Obispo, Calif., is discontinuing publishing and developing antivirus and security products, ending its association with ViruSafe, ViruSafe/LAN and AllSafe. All users wil be supported through the end of 1994, Xtree said. The firm will continue to develop system and network management products.

### Joining the race

**IMSI** in San Rafael, Calif., which makes PC-based TurboCAD computer-aided design software, entered the Apple Computer, Inc. Macintosh and Unix markets by acquiring **IGC Technology** in San Francisco, maker of the Pegasus CAD program.

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# Doing the Windows two-step

## WordPerfect 5.2 offers interim, DOS-compatible step, but it's 6.0 that's a true GUI

By Michael Vizard

After making a less than stellar entry into the Microsoft Corp. Windows application software market, WordPerfect Corp. appears to have a stable product in Version 5.2 of WordPerfect for Windows that is compatible with DOS versions of the software, according to user reports.

But the company will not take full advantage of the graphical environment provided by Windows until it releases Version 6.0 of WordPerfect for Windows at the end of this year.

Since the company released Version 5.2 of its WordPerfect for Windows word processing package two months ago, its drive to recover its dominant position in the word processing market has been picking up steam.

Of the 1.7 million units of WordPerfect for Windows that shipped in 1991, about 200,000 were Version 5.2, according to market research firm Dataquest, Inc. in San Jose, Calif. For WordPerfect, the delivery of that version helped lay to rest a number of user complaints concerning the erratic behavior of previous versions.

**Turnaround**

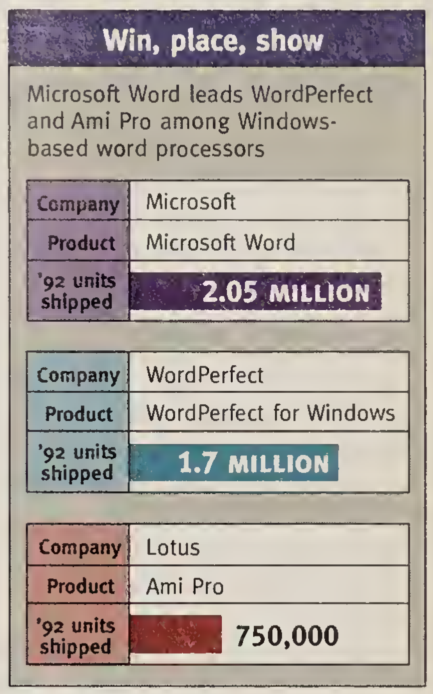
According to estimates from the Software Publishers Association, sales of word processing packages for Windows in the third quarter totaled $118.4 million, compared with $74 million in the DOS market and $31.4 million in the Macintosh market. In the same period in 1991, sales of word processing packages for Windows were only $37.6 million, compared with $119.7 million in the DOS world and $22.7 million in the Macintosh market.

But WordPerfect's inability to initially deliver a stable version of its word processor for Windows, coupled with its decision to focus heavily on compatibility with its DOS product, has taken a heavy toll on the company's position among customers formally commited to the DOS version.

"The instability of the first release of WordPerfect led us to choose Microsoft Word. We discounted the other players in the market because they didn't have enough market share," said Dave Ness, consulting services manager at the *Washington Post*.

Gene Hemrich, market manager for Sears Roebuck and Co. in Buffalo, N.Y., is another Word user.

**Win, place, show**



Microsoft Word leads WordPerfect and Ami Pro among Windows-based word processors

| Company | Product | '92 units shipped |
|---|---|---|
| Microsoft | Microsoft Word | 2.05 MILLION |
| WordPerfect | WordPerfect for Windows | 1.7 MILLION |
| Lotus | Ami Pro | 750,000 |

Source: Dataquest, Inc.

"Word is significantly easier to run than WordPerfect. Microsoft has taken more advantage of the GUI environment and provides more of a desktop publishing environment. For example, if you want to make an envelope in Word, all you have to do is click on the envelope icon," he added.

### 6.0 'completely different'

A spokeswoman for WordPerfect said Version 5.0 was developed in under 18 months and represented only the company's initial foray into the Windows market. Version 6.0 will be a 32-bit implementation of WordPerfect that will take full advantage of the Windows graphical user interface on DOS and the Workplace Shell on OS/2 to create a true desktop publishing environment, she said.

"Version 6.0 of WordPerfect is completely different from Version 5.0. It will be an unbelievable change," said Bill Kesselring, industry analyst for PC software at Dataquest. "Moving to Windows is essentially a two-step process for WordPerfect."

And for some users, a phased approach that maintains compatibility with DOS versions of WordPerfect is an attractive idea.

"Word for Windows is an excellent package, but most of our people already knew WordPerfect so staying with WordPerfect for Windows was the wiser choice," said Jay McKinney, network services manager at Complete Health, a health maintenance organization

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Operating systems

# 2.1 better be good, OS/2 users say

By Christopher Lindquist

**■ The beta-test version of IBM's OS/2 Version 2.1 has been available since Dec. 19, and users generally seem happy with its performance. However, some said they hope IBM makes sure this version goes out rock solid in order to silence OS/2 critics.**

"Somehow IBM has gotten themselves into this position of people expecting a lot more from them than they ever did from Microsoft," said Larry Waibel, systems software technical specialist at the Cubic Automated Revenue Collection Group in San Diego. He said he hopes IBM makes this version of OS/2 bulletproof, though he conceded it is not quite there yet.

"I've had a couple hang-ups in the two months I've been using it, which is certainly better than anybody got in Windows," Waibel said.

Other users exchanging messages on CompuServe voiced similar sentiments that IBM must make OS/2 2.1 a stable product if it is to succeed. Several CompuServe users even requested that IBM release another beta-test version before shipping the product.

"We're all on your side here — we want OS/2 to succeed," said one developer on CompuServe. "Another rush job is exactly what it doesn't need."

**OS/2 will reportedly include all the features of OS/2 2.0 with the Service Pak.**

Currently, beta-test users are still reporting problems with installation, applications that ran under OS/2 2.0 "breaking" under OS/2 2.1 and "memory leaks" that force users to reboot the machine every so often. However, reports of dramatic improvements are also cropping up.

### Graphics, speed enhancements

According to Waibel, the best features of the OS/2 2.1 beta-test version are improved graphics handling and support for higher resolutions and Windows 3.1. He also cited enhanced performance/speed, which he said may help silence critics who have complained that OS/2 was too slow on normal hardware configurations.

IBM has reportedly been swamped with requests to become part of the beta-test program, and users said that IBM is even back-ordered on getting the beta-test disks out.

OS/2 2.1 will reportedly include all the features of OS/2 2.0 with the Service Pak, which includes the 32-bit graphics engine plus Adobe Type Manager Version 2.5 font support under Windows and support for Windows 3.1 applications.

Portable computers

# Are luggables going extinct?

By Michael Fitzgerald

Set up at the press table at a recent Houston Rockets home game was an original Compaq Computer Corp. Portable. You can bet that whatever cash-strapped user is getting arm-sore with that 31.3-pound beast will buy a notebook, not Compaq's Portable 486 luggable, when there is room in the budget for a new PC.

Heavyweight, heavy-duty portables are still around, more than 10 years after Compaq's first portable, which followed Osborne, the first portable ever, to market. Today's versions run the fastest microprocessors available from Intel Corp. or reduced instruction set computing vendors. They generally offer active-matrix color screens as an option, feature hard drives larger than 200M bytes and offer expansion slots. They do not run on batteries.

closer LOOK
Luggable PCs

They are also becoming an endangered species in some minds. In 1992, a year when most categories of personal computing hardware saw double-digit growth, the luggable market shrank, according to International Data Corp. (IDC), a market researcher in Framingham, Mass.

IDC projected that 71,000 units were sold in 1992, down from 86,000 units in 1991, a steep drop from the 145,000 units sold in 1990.

Still, IDC sees the market holding near 60,000 units as far in the future as 1996, though some luggable vendors dispute its numbers.

Volker Dolch, president of Dolch Computer Systems in Milpitas, Calif., predicted his company will grow 60% in 1993, putting it at $30 million in sales. He claimed that the privately held company is seeing profits grow, despite offering the most expensive portables money can buy.

He said performance, not weight, is the key factor for customers.

"We go to the threshold of pain where you can still call it portable and put as much computing resources on it as we can, and we do not see the market going away in favor of a notebook," Dolch said. He also said some market researchers show stable growth in the near term for luggables.

Still, some customers are opting out of the big systems.

"They're just too heavy," said a PC administrator at a U.S.-based multinational firm who asked not to be identified. The user said his company has 20 luggables from Dolch and 20 from Broadax Systems, Inc. in El Monte, Calif. He said his budget this year will go to 486DX-based notebook computers with hefty hard drives, probably with a docking station for expansion purposes.

Even the luggable market leaders, Compaq and Toshiba America Information Systems, Inc., wonder aloud how much longer they will stick with the hefty portables that once were their staple portables.

"It's a fairly niche market now, and we see it being cannibalized by mainstream markets [down the road]," said Bob Bauer, director of marketing for Compaq North America. While saying "I wouldn't write [luggables] off as a product category," Bauer said Compaq was not sure it would produce a new version of the product.

"The growth is not there anymore, but there will always be a place for a [portable] that will take [an expansion] card," said Kyle P. Walls, senior brand manager at Toshiba. What remains unclear is whether that place will in the future be filled by notebooks with Personal Computer Memory Card International Association capability.

"Will these machines largely replace ISA cards for expandability options?" is the question, according to Walls.

At 12 pounds, the Toshiba T6400 series comes in at the low end of the market as a sort of luggable/laptop hybrid. While AC-powered, it has only one expansion slot. "An awful lot of users buy [the T6400 series] for the big hard drive, and now they can get that in the notebooks," Walls said.

**Multimedia: A fertile area**

All the players in the market see multimedia as a potential growth area for luggables (see story at right). Toshiba positions its systems as multimedia devices, and Bauer said Compaq is considering building local-bus graphics and its Business Audio sound capabilities into the Portable 486.

"Portable multimedia solutions are difficult to do in notebooks right now," Bauer said.

Dolch agreed, saying that in the future there will be Presentation Computers, which are essentially multimedia road shows built into a portable package. He said he thinks, though, that substantial growth will come not from multimedia but from portable engineering workstations.

"There is a section of the market that is not understood by outside [our niche]: the user who needs a mobile workstation, the more power the better," Dolch said.

The bigger portables do benefit from a lack of competition: Pricing does not suffer as much, so the machines can generate a solid profit.

**Luggables sampler**

| | Compaq Computer | Toshiba America Information Systems | Dolch Computer Systems |
|---|---|---|---|
| | **Portable 486** | **T6400 family** | **PAC 486-5DE** |
| **Processor** | 486DX chip<br>Up to 33/66 MHz | 486DX chip<br>Up to 50 MHz | 486DX<br>33/66 MHz |
| **Display** | Optional active-matrix color screen | Optional active-matrix color screen | Active-matrix color screen |
| **Disk** | 525M-byte hard drive | 200M-byte hard drive | 1.2G-byte hard drive |
| **Expansion slots** | Two | One | Three |
| **Weight** | 17.6 pounds | 11.7 to 12.9 pounds | 18 pounds |

CW Chart: Michael Siggins

## Last frontier

Multimedia may be the last bastion of growth for the luggable market.

"Multimedia applications require hooking systems with internal CD-ROMs and things," said Ted Julian, an analyst at IDC in Framingham, Mass.

Toshiba has positioned its AC portable series, the T6400, as a portable multimedia device.

"We've gone into multimedia in a big way," said Kyle P. Walls, senior brand manager at Toshiba. "One of the reasons for looking at multimedia as an application for AC portables is that there are things we can do now with an AC portable that you simply can't do with a notebook and probably won't be able to do anytime in the near future."

Walls cited full-motion video and high-quality sound as two examples.

Some users say there are ways around these issues that can save them from getting arm-weary.

"We think we can run multimedia presentations off of a notebook, using the appropriate hardware and pulling our output from the parallel port," said J. Briscoe Stephens, data and information systems manager at NASA's Earth Science and Applications Division in Huntsville, Ala. —*Michael Fitzgerald*

---

# On-the-go brass do the FOCS Trot

By Gary H. Anthes

**Portable office**

Although military officers travel a great deal, they have not yet caught on to the idea of carrying portable computers. Result: E-mail goes unanswered and office work languishes. Now, a Navy admiral has a plan to change all that; he wants admirals to take their offices with them —electronically.

For years, U.S. Navy radio operators have used the term "Foxtrot" for the letter "F." Now, Navy admirals and other military staff will carry the FOCS Trot over their shoulders when they travel by land, sea or air.

The FOCS (Flag Officer's Command System) Trot is an "office in a box" intended to keep the Navy brass on top of their office chores anywhere in the world. It is a 15-pound package containing a laptop computer, telephone, radio transmitter, printer and fax/copier. It comes with Navy software for word processing, spreadsheets, communications and satellite tracking.

FOCS Trot allows users to establish a satellite link to the Defense Data Network, a secure network used for electronic mail and document transfer. The satellite-tracking software helps the user locate communications satellites to aid in establishing contact with them. Another option sends a continuous signal to a Global Positioning Satellite, allowing headquarters to pinpoint an admiral's location at all times.

FOCS Trot was commissioned by Vice Adm. J. O. Tuttle, the Navy's director of space and electronic warfare. Navy Cmdr. Austin Boyd, an aide to Tuttle, said Tuttle wants senior Navy officers, who now usually travel without even a portable computer, to set an example for the military. "We're usually behind in the use of technology; we want to be ahead this time," Boyd said.

Boyd said FOCS Trot is intended to relieve officers from the avalanche of mail awaiting them when they return from a trip. He said Tuttle and his staff recently returned from a 10-day, 35,000-mile tour during which a test version of FOCS Trot processed 92 messages of two to five pages each.

FOCS Trot, which can work off a single 12V DC source, was built entirely from commercially available products from more than 10 sources by Microcomputer Power, Inc. in Houston.

Fed de Gastyne, manager of government programs at the value-added reseller, said the immediate market for FOCS Trot is 225 admirals, or Navy flag officers. The firm also hopes to sell it to other military officers and to civilian emergency response teams.

The laptop is an NCR Corp. 3170 with an Intel Corp. 80386 20-MHz processor. Boyd said FOCS Trot, with all software loaded, costs about $10,000.

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IBM LASERPRINTERS. PAGES AHEAD.

Commentary

Paul Gillin

# OS/2 — no jokes

I've contacted the FBI's Federal Witness Relocation program for help following the backlash from all you OS/2 fans over my Jan. 4 column poking fun at our favorite underappreciated operating system. Sheesh, you all are as bad as Unix people. OK, here's the straight, unfunny version of what I think of the OS/2-Windows battle and why I think OS/2's prospects aren't so good.

First of all, understand that OS/2 is a vastly superior operating environment to Windows. It should be. It doesn't have to live with DOS.

Comparing a 32-bit multithreaded, multitasking, protected-mode operating system to a 16-bit, single-tasking real-mode operating system is like pitting a hare against a tortoise in a foot race. On a straight features comparison, Windows doesn't stand a chance. Unfortunately for IBM, the tortoise is winning this race. Why? Marketing.

Windows is running rings around IBM in the retail stores and on the desktops of Mr. and Ms. Typical Corporate User because it meets a simple set of expectations and does it pretty well. Windows is not fancy, but it is easy to install and use and it doesn't expect its users to understand CONFIG.SYS and dual boot options unless they want to get fancy. And it is enough of an improvement over character-mode DOS to justify its upgrade expense.

In contrast, OS/2 is overkill. IBM's biggest mistake with OS/2 was positioning it as an operating system for the everyday PC user. It isn't. OS/2 is very difficult to install (even IBMers will admit that), it eats up an acre of disk space, and it requires that the user understand concepts such as what a DLL file does or the difference between startable and installable partitions.

> IBM's biggest mistake with OS/2 was positioning it as a system for the everyday PC user.

I'm a reasonably savvy PC user, yet I was completely baffled by whole sections of the OS/2 installation manual. I can't imagine my next-door neighbor trying to figure it out.

OS/2 is an extremely powerful operating system for client/server applications, which is where the corporate world is going. But IBM set the bar way too high by positioning it as an operating system for the rest of us. It is impossible for OS/2 to compete with Windows under those conditions.

IBM's second big mistake with OS/2 was saying that it was "a better Windows than Windows." It's not. A lot of Windows programs don't migrate or install easily under OS/2. If they did, IBM wouldn't have to devote so much of its bulletin board to instructions for getting Windows applications running.

The Windows applications that do run tend to be slow because so much system overhead is needed to support them. Strike two.

IBM shot OS/2 in the foot with "better Windows than Windows" by eliminating much of the incentive for developers to write native OS/2 applications. The only reason left to do that is to take advantage of 32-bit addressing, which most mainstream applications don't need anyway.

Sure, there are OS/2 applications available — DeScribe, Inc.'s DeScribe word processor and Symantec's Norton Commander for OS/2 are great products. But ask any software company executive how excited he is about the OS/2 market and you'll get a yawn. Believe me, I've asked.

An operating system without applications is like a car for which you can't get spare parts: Enthusiasts won't care, but the mass market will reject it. And remember that IBM wants OS/2 to be a mass market operating system.

Microsoft has used Windows as a place holder long enough to get everyone excited about Windows NT. I expect Microsoft will have a very tough time selling NT as a multiuser server operating system, but I have no doubts NT will be a huge hit with Windows power users who are tired of looking at that hourglass icon. That's not good news for OS/2, which is currently having its greatest success playing to that audience.

The biggest mistake Microsoft could make with NT would be to not provide backward compatibility to Windows applications. But I don't think it would do that. If NT is a hit on the power user's desktop, then OS/2's only room to maneuver will be with true Blue corporate accounts, and there are fewer and fewer of those left.

Don't get me wrong: OS/2 is a great product, and I hope it does very well. But anyone who takes on Microsoft in desktop operating systems these days is pushing a boulder up a mountain. Even IBM isn't that strong anymore.

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Gillin is *Computerworld*'s executive editor. His MCI Mail address is 575-4120.

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# WordPerfect

CONTINUED FROM PAGE 29

in Birmingham, Ala.

"We did experience quite a number of intermittent problems with Version 5.1, but we haven't had any problems to date with Version 5.2. WordPerfect has always had superior customer service," he said.

But whether that reputation for superior service will be enough to blunt the efforts of Microsoft and Lotus Development Corp. remains to be seen.

"We were late to the Windows word processing arena, but we were not the first player in the DOS market, either. We believe that our customer service capabilities will also make us the leading supplier in the Windows market," said Devin Durrant, marketing director for WordPerfect for Windows.

"This is a huge market that is still up for grabs. And we are definitely targeting WordPerfect users with Microsoft Word," countered Julie Bick, a Microsoft product manager. "For example, we have a facility that allows users to use WordPerfect keystokes that we then convert into Word keystrokes."

"Our biggest sales challenge is selling to WordPerfect for DOS users," said Bill Jones, director of product market for Ami Pro at Lotus.

"You have to go through a weaning process, so we give people the ability to pen a WordPerfect file directly and a facility that does automatic conversion between formats," he added.

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Desktop mapping

# Computer maps help cops catch crooks

By Mitch Betts

SAN BERNARDINO, CALIF.

**A first-of-its-kind desktop mapping program helps the San Bernadino Sheriff's Department visualize crime patterns and allocate resources in the nation's biggest county.**

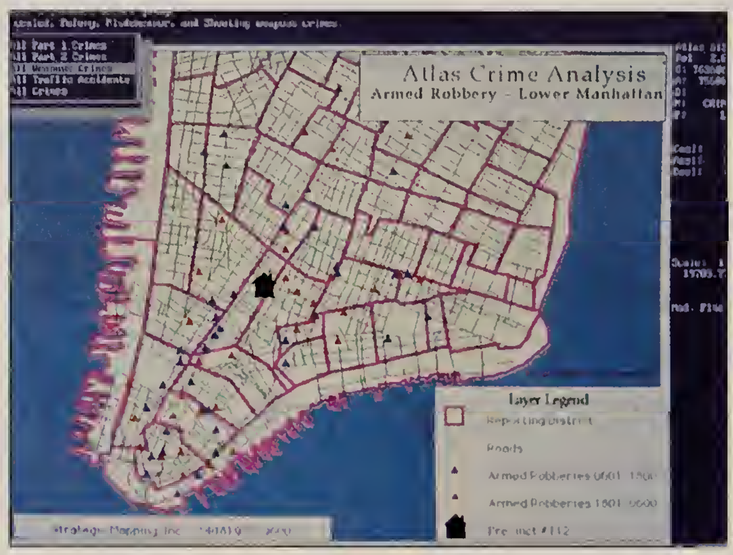
"We're in the midst of a major budget crunch, so we have to distribute our personnel efficiently. We use [the mapping system] to determine the best places to patrol," said Tim Miller, a research analyst at the San Bernardino Sheriff's Department. The county covers 20,000 square miles.

The PC software package, called Atlas Crime Analysis and priced at $12,250, takes standard database files of crime incidents and automatically matches them with computerized street maps.

Users can then generate maps showing the criminal activity in a specific location or the geographic pattern for certain types of crime (such as burglaries or rapes) and the time of day when they occurred.

The software was developed by Strategic Mapping, Inc. in Santa Clara, Calif., with significant help from the San Bernardino Sheriff's Department.

The department runs the software on Intel Corp. I486-based PCs at 15 stations, which download crime data from a Digital Equipment Corp. VAX.



**Atlas Crime Analysis** *plots crime locations on computerized street maps to help police track crime sprees and compile evidence to bring suspects to court*

"For us, the key to this program is its interface, which uses plain English commands that our patrol deputies or clerks can use," Miller said.

For example, to display burglaries on a map, a user simply picks "Burglaries" from a menu using the mouse or keyboard.

Police officers have a hard enough time keeping up with their reports and police training, he added, so they do not have time for computer training to learn query languages.

### Arresting proof

The mapping system has already been used to track several crime sprees, including the strange case of a man who was shooting out car windows at a rate of 70 a night, according to Miller.

The software can also help build a court case — such as showing how a series of rapes occurred on the suspect's route from home to work — or identify a suspect. Miller said officers plotted the address of a recent parolee and found that nearby burglaries tripled after his release.

In the future, the department wants to enhance the system so it will automatically generate reports that alert officers when certain thresholds are crossed, such as 10 crimes in a half-mile radius. As Miller put it: "We want the system to tell us where our problems are."

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# HELP LINE

## Microsoft Excel

*This is another installment in a series of articles containing questions commonly asked by users and responses from vendors' support lines. This week's focus is on Microsoft Corp.'s Excel spreadsheet.*

**Q: How can I change an overlay chart without affecting the main chart?**
A: You can change the chart type of the overlay chart without affecting the main chart type by selecting one of the series that is in the overlay chart and holding down the Shift key while you choose a chart type from the Format menu. You can change the chart type of the main chart without affecting the overlay chart in the same way.

**Q: How can I add data from a worksheet to an existing chart?**
A: You can paste data from a worksheet into an existing chart. First, make sure both the worksheet and chart documents are open. Select the worksheet data you want to add and click the Copy tool or choose Copy from the Edit or shortcut menu. Switch to the chart window and choose Paste from the Edit or shortcut menu.

To add data and control the way it is plotted, follow the above procedure but choose Paste Special from the Edit menu instead. Select the options you want in the Paste Special dialog box and choose OK.

**Q: How can I add a picture or an object to a chart?**
A: You can copy a picture from another application or a graphic object drawn using Excel drawing tools and use that picture or graphic object as the data marker in an existing bar, column, line or radar chart.

First, switch to the document that contains the picture or object you would like to use. Generally, you should try to match the width of the picture or object to the width of the data marker it will replace.

Copy the picture or object by selecting it and choosing Copy from the Edit menu or the shortcut menu (or, if you are copying from another application, follow that application's procedure for copying).

Switch to the Excel chart in which you want to use the picture or object, select the data marker or chart data series you want replaced and choose Paste from the Edit menu. Once it is in place, you can double-click the picture marker to bring up the Format Patterns dialog box and choose whether to stretch, stack multiple copies or stack scaled copies of the picture.

**Q: If I want to create a report in Excel, can I print a specified number of pages?**
A: For example, if your worksheet is three pages wide by four pages tall, you can select Fit To and use the default of one page wide by one page tall, and your worksheet will shrink to the width and height specified. You can also specify print options by choosing Print Preview from the File menu and selecting Setup.

**Q: How can I create a worksheet template?**
A: If you frequently design worksheets to be used as models, you should create a worksheet template. The method used is similar to that described in "Setting a new default chart type" under the "Charting" section.

First, create a worksheet with the headings and the formats you need. Next, choose Save As from the File menu to save the worksheet as a template. Save the template in your Excel Startup directory and its name will appear in the New dialog box, which appears when you choose the New command from the File menu.

**Q: I need to do "what if" scenarios that include optimization formulas. Is there a way to use Scenario Manager with Solver to make this easier?**
A: You can solve or optimize a problem and then save the various inputs and results for future review by choosing Scenario Manager and Excel Solver from the Formula menu. If you do not see these commands on the Formula menu, run Setup to install them.

The changing cells you specify with Scenario Manager will be suggested automatically as the changing cells in Solver and vice versa. Solver can save its solutions as scenarios for display in Scenario Manager. Scenario Manager can also be used to set up initial cell values for Solver's solution process.

# New Products

## Software application packages

MapInfo Corp. has introduced Maps&Data, a desktop mapping package.

The product was designed for visual analysis and presentation. According to the company, Maps&Data runs under Microsoft Corp.'s Windows and offers presentation and analytic features that display site analysis, availability and distribution of inventory, population trends and prospect locations and demographics, among others. Maps&Data can import American Standard Code for Information Interchange and import/export data files in Borland International, Inc.'s dBase, Microsoft's Excel and Lotus Development Corp.'s Lotus formats.

Maps&Data costs $395.

*➤MapInfo*
*200 Broadway*
*Troy, N.Y. 12180*
*(518) 274-6000*

---

Looking Glass Software, Inc. has released the Looking Glass Cheetah 3D for Microsoft Corp.'s Windows 3.0.

Cheetah 3D is a 24-bit color rendering program that provides a file navigator, multiple object rendering and support for complex objects, the company reported. Standard rendering features include four viewing modes, basic animation capabilities, a Quick Mode for fast proof of concept rendering and multiple light sources, among others.

Cheetah 3D costs $349.94.

*➤Looking Glass Software*
*Suite 300*
*9227 6th Ave.*
*Inglewood, Calif. 90305*
*(310) 348-8240*

---

TimeValue Software has released the network version of File In Time, a task management program for tax professionals.

Multiple users receive access to capabilities such as updating tasks and adding client information. Setup files can be saved by individual users on the network, including printer and color setup, the company reported. Progress made on each task can be followed, and users are alerted to due dates. The product runs on PCs with 512K bytes of memory using DOS 2.1 or higher.

Prices start at approximately $300 for one to four users.

*➤TimeValue Software*
*Suite 100*
*4 Jenner St.*
*Irvine, Calif. 92713*
*(714) 727-1800*

---

Saratoga Systems, Inc. has introduced its SPS account management and sales information software package for the Microsoft Corp. Windows environment.

According to the company, multilevel customer profiles and sales-related information can be accessed and updated. Icons and pull-down menus are featured, and tool bars are available for operations such as activity scheduling and report generation.

SPS for Windows costs $1,250 per PC copy.

*➤Saratoga Systems*
*Suite 230*
*1550 S. Bascom Ave.*
*Campbell, Calif. 95008*
*(408) 371-9330*

---

Microsoft Corp. has released the second version of Multimedia Word & Bookshelf, Video and Sound Edition.

According to the company, it is the first and only available word processor on CD-ROM. Designed as a multimedia-enhanced version of Word for Windows, the product allows users to implant sound effects into documents and play and edit videos. Version 2.0 of Microsoft Word for Windows with WordPerfect Corp.'s WordPerfect file converters is also included.

Multimedia Word & Bookshelf, Video and Sound Edition costs $595.

*➤Microsoft*
*1 Microsoft Way*
*Redmond, Wash. 98052*
*(206) 882-8080*

---

Advanced Graphics Software, Inc. has introduced Version 5.0 of its technical presentation graphics software, SlideWrite Plus for DOS.

An assortment of nonlinear, linear and weighted curve-fitting functions are furnished along with drawing and text capabilities and statistical analysis, the company said. Pull-down menus access Version 5.0's sizing, text formatting and on-screen drawing. A what-you-see-is-what-you-get user interface is provided.

SlideWrite Plus for DOS Version 5.0 costs $445.

*➤Advanced Graphics Software*
*Suite 105*
*5825 Avenida Encinas*
*Carlsbad, Calif. 92008*
*(619) 931-1919*

## Macintosh products

Dantz Development Corp. has introduced Version 2.0 of Retrospect and Retrospect Remote, backup programs for the Apple Computer, Inc. Macintosh.

A new interface is offered in Release 2.0 that divides all functions into five logical areas. A "Retrospect Directory" provides five icons that display each function and give a short description. Macintosh users backed up on Retrospect Remote are informed if a backup has occurred or if one has not happened after a predetermined number of days.

Retrospect 2.0 costs $249, and Retrospect Remote costs $449.

*➤Dantz Development*
*1400 Shattuck Ave.*
*Berkeley, Calif. 94709*
*(510) 849-0293*

---

Relax Technology, Inc. has announced a high-peformance optical storage and file-finding package for Apple Computer, Inc. Macintosh users.

Sierra MO, the company's 3½-in., 128M-byte rewritable optical disc, drive is being bundled with On Location, On Technology, Inc.'s file-finding software.

According to the company, Sierra MO's average seek time is 33 msec, and the optical drive has a sustained data transfer rate of 563K byte/sec. The product has an embedded Small Computer Systems Interface.

Sierra MO costs $899.

*➤Relax Technology*
*3101 Whipple Road*
*Union City, Calif. 94587*
*(510) 471-6112*

## Utilities

Fifth Generation Systems has introduced Version 1.0 of Direct Access Desktop, a Microsoft Corp. Windows-based desktop utility.

According to the company, the product enables users to create multiple desktops, simplify Windows, protect data and optimize their work. Direct Access Desktop offers a variety of features such as an applications menu, control panel and a tool bar of functional icons.

It also offers nine virtual desktops that provide nine individual Windows desktops for tasks using applications such as desktop publishing software and spreadsheet software for accounting reports.

The product costs $129.

*➤Fifth Generation Systems*
*10049 N. Reiger Road*
*Baton Rouge, La. 70809*
*(504) 291-7221*

***"If Lexmark is an indicator of the kind of innovation we can expect from an IBM spin-off, OS/2 users have much to look forward to...."***

*OS/2 Professional Magazine,*
November 1992

***"The LaserPrinter 10 is appropriately named. It is close to a perfect 10...."***

*Computer Reseller News,*
February 3, 1992

***"Lexmark offers the best combination of price and performance for printers used for desktop publishing."***

*Windows Magazine,*
February 1992

***"With the IBM LaserPrinter 6, Lexmark proudly comes into its own on the laser printer turf by paying special attention to paper handling and resolution quality. This workhorse prints on both delicate stationery and card stocks, and can deliver a jaw-dropping 600-by-600 dpi resolution."***

*ComputerLand Magazine,*
April 1992

***"The 4079 is a watershed color printer. The list of features, low pricing, solid warranty... all combine to make this a color inkjet printer against which others will be measured."***

*BIS Strategic Decisions,*
October 1992

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*BYTE Magazine,*
July 1992

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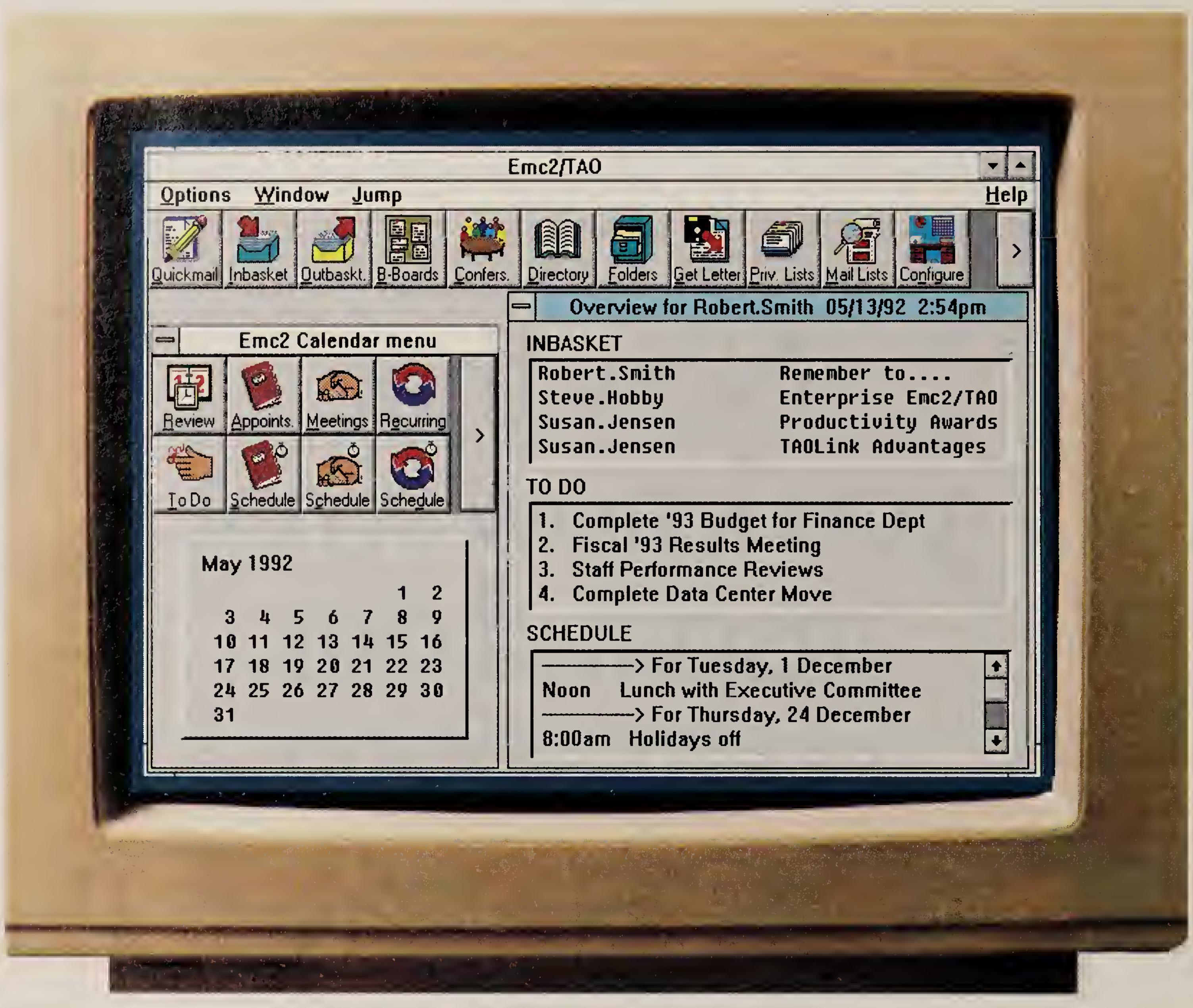
# E-Mail For Both Mainframe And LAN Is A Huge Headache…



Overview for Robert.Smith 05/13/92 2:54pm

INBASKET

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| Robert.Smith | Remember to.... |
| Steve.Hobby | Enterprise Emc2/TAO |
| Susan.Jensen | Productivity Awards |
| Susan.Jensen | TAOLink Advantages |

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1. Complete '93 Budget for Finance Dept
2. Fiscal '93 Results Meeting
3. Staff Performance Reviews
4. Complete Data Center Move

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Noon Lunch with Executive Committee
-------------> For Thursday, 24 December
8:00am Holidays off

May 1992

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In brief, 61

PC LAN imaging

# Integration expertise key

By Michele Dostert

Two of the hottest technologies of the 1990s — imaging systems and PC-based local-area networks — are being combined to form cost-effective, robust information management platforms. But users warn that careful planning — both on the technology side and the business side — is necessary for a successful rollout.

"Buying LAN-based imaging is not like buying a turnkey solution from a minicomputer vendor like DEC or Wang. You need a good systems integrator because if something goes wrong, there is no single vendor to call," said Bruce Silver, director of image management at BIS Strategic Decisions, a consulting firm in Norwell, Mass.

Users who choose PC LAN platforms for their imaging systems, rather than Unix-based or minicomputer-based systems, cite company standards, scalability and price as their reasons. Connie Hiestand, regulatory information coordinator at Pacific Corp., a utility in Portland, Ore., said her company is standardizing on PC LANs, so that was where she looked for an imaging system. "We were also impressed by the scalability of the LAN-based systems; we could get what we need today for a low cost but still allow for rapid growth in the future," she said.

**Growing popularity**

The total number of PC LAN-based, image-enabled seats will grow from 38,500 in 1992 to 451,000 by 1997, according to research firm BIS Strategic Decisions.

### Price a factor

According to Silver, minicomputer or Unix imaging systems can cost up to $20,000 dollars per seat, while LAN-based imaging is only $4,000 to $5,000 per seat — most of that cost is hardware that is getting cheaper. "PC LANs will continue to gain a larger share of the total imaging market in the next five years, primarily because of price," he said.

Although image files are large — typically 50,000 byte/page — users report no bandwidth problems in running imaging on their existing wiring. "You don't need fiber to the desktop; you'll get all the speed you need from 10M-byte Ethernet or 16M-byte Token Ring," said Jane Landon, an information systems vice president at The Chase Manhattan Bank NA in New York who has installed four separate PC LAN imaging systems.

The PC LAN/imaging bottleneck arises when accessing the image files on the server. Typically, only 5,000 documents can be stored in a gigabyte, making a magnetic-only storage system impractical. But because the robotics of the optical jukebox systems commonly attached to PC imaging servers are too slow for constant file access, PC LAN-based imaging typically uses a combination of the two.

Jim Wall, coordinator of the Continuing Professional Education Program that handles teacher certification in Madison, Wis., said, "All of the documents in the file of a teacher currently being certified or recertified are stored on magnetic — typically for three months or so. When the certification is issued, the file and documents are then archived back to the optical jukebox."

There are many ways to handle document retrieval, such as combined magnetic/optical storage, caching at the server or segmenting and adding another server to the system. "It takes a high level of expertise to set up these solutions, integrate them with the LAN operating system and the applications and tune them for optimum performance," Silver said.

When planning an imaging system, users need to study their business processes as well as their technical requirements. Wall said, "Our systems integrator studied our needs from both a technical and from a business work-flow standpoint, suggesting optimal routing paths and automation of some processes. You need to do that to get the most for your imaging dollar."

# Notes 3.0 on course; Unix support, add-ons delayed

By Michael Vizard

**■ As Lotus Development Corp. moves closer to its long-awaited rollout of Version 3.0 of Notes, the relationship is becoming apparent between the core components of the release and the layered software that runs on top of it.**

Scheduled to ship next month, the new version of Notes, Lotus' groupware software package, will include a wide range of features designed to enhance groupware application development across Microsoft Corp. Windows, MS-DOS, Unix and Apple Computer, Inc. Macintosh systems.

However, users looking for Notes 3.0 on Unix platforms will have to wait until the second quarter, and the company has yet to commit to a delivery schedule for two key add-on products for Notes.

### Macintosh support

In its initial release, Notes 3.0 will add support for Macintosh clients to its support for Windows and DOS clients. Lotus will deliver Unix server and client support, beginning with support for two to three different platforms, in the second quarter, said Cliff Conneighton, Lotus' director of marketing for communications products.

Although Conneighton declined to identify which Unix systems Notes 3.0 would support first, he did say it would support up to six Unix platforms by the end of the year.

In addition to working on Unix implementations, Lotus is expanding its IBM OS/2 focus for Notes. In the second half of the year, the company is scheduled to deliver a 32-bit version for OS/2 that supports the Workplace Shell utility.

Notes 3.0, *page 61*

# Mexican real estate firm 'goes Hollywood'

By Maryfran Johnson
GUADALAJARA, MEXICO

At RE/Max Mexico's real estate headquarters, the curtain is rising on what sales agents call "The Hollywood Show" as a network of Sun Microsystems, Inc.'s SPARCclassic workstations take center stage.

This week, the real estate franchise corporation will announce a $4 million contract with Sun for the installation of more than 600 SPARCstations and SPARCservers to run a custom-built, multimedia application that showcases property listings via color pictures and walk-through videos.

"When customers come into a RE/Max office, they'll be given 'The Hollywood Show,'" said Peter Bowthorpe, general manager of RE/Max Mexico. "We believe this is the way real estate offices in general will be going. The human eye is so much more useful in absorbing information than the ear."

### Saves a lot of time

The multimedia application is called CLI/Max, which in Spanish is the acronym for *Consolidacion de Listados Interactiva/Maxima*. The system was developed for RE/Max by one of Sun's distribution partners, Cromasoft SA de C.V., here. It uses database query capabilities to search for a customer's ideal property, then displays a series of photos or videos in windows on the computer screen.

"This is a tremendous time-saver for buyers and sellers. It can take all day to see three houses here," said Steve Tirado, general manager and director of Sun Microsystems of Mexico.

When RE/Max test-marketed the software in one resort area office and a Guadalajara shopping center, the reaction to it was gratifyingly intense, Bowthorpe said. "It nearly stopped the traffic, and we realized we were on to something," he said.

RE/Max's first 30 franchises will have the application up and running by June 1, with a SPARCclassic set up in each office's trademark red, white and blue reception room. RE/Max plans to sell 300 franchises in Mexico and next year will expand into Latin America.

The company is also replacing its PCs, which run financial and administrative applications now, with SPARCclassics, Sun's lowest priced color workstation (see story page 38).

"We're telling everyone in the network to put any existing machines to the side and invest in the Sun technology with us," Bowthorpe said. "Essentially, each office has to buy about $20,000 worth of new equipment."

### Lofty aspirations

RE/Max has bigger ambitions for CLI/Max as well. The company plans to submit the software system to the Mexican government as a proposed standard for the country's first national electronic multilisting service.

And while Sun's deal initially

Real estate, *page 38*

ON SITE

**RE/Max Mexico**
*Guadalajara, Mexico*

**Challenge:** To allow potential buyers to view properties and surrounding neighborhoods via on-screen color pictures and walk-through videos.

**Technology:** Network of Sun Microsystems SPARCstations and SPARCservers running custom-built real estate application from Cromasoft.

## Real estate firm

CONTINUED FROM PAGE 37

calls for $4 million worth of equipment during the next five years, the relationship could mushroom as RE/Max rolls the listing application into Latin America.

Eventually, several thousand SPARCstations could end up in RE/Max offices throughout the Americas, Bowthorpe said.

**Market hurdles**

At this point, however, the real estate profession in Mexico is decades behind its counterparts in the U.S. and Canada, the manager noted. There are no licensing or certification procedures for real estate brokers, he said, and the public is extremely leery of setting foot in most real estate offices.

"That is a real problem with both the national and the foreign public," Bowthorpe said. "Most people don't tend to believe the real estate agent. We have a reputation for exaggerating and putting a spin on stuff. But the camera does not lie, particularly in moving video. If the neighborhood is rough, it's rough."

**RE/Max plans to sell 300 franchises in Mexico and expand into Latin America.**

Before RE/Max opened for business in Mexico last month, the company spent 18 months analyzing real estate sales and pinpointing problem areas.

"We found that what causes people not to buy is the cost of financing and a basic lack of information," Bowthorpe explained. "We had to find the tool that would enable us to overcome this problem."

The search for that tool led RE/Max to discussions with IBM, Hewlett-Packard Co. and Sun. The key factor in securing the deal for Sun was the SPARCclassic's low-cost yet sophisticated multimedia capabilities, Bowthorpe said.

The database of property images will be filled by the sales agents themselves, who will take their own photos and video footage and then ship it to "transfer centers" in Mexico City, Guadalajara or Monterey for processing and editing. Each transfer center will be anchored by one of Sun's high-end servers.

"The only limitations we see are how complicated it may be for our people to use," Bowthorpe said. "We believe we've made it pretty simple, though. It's much less complicated than one might imagine."

### SPARC power

Sun Microsystems introduced the SPARCclassic in November 1992 as the first color workstation to break the $4,000 price point — $3,995 when purchased in "12-packs."

The SPARCclassic rates 59 million instructions per second of processing power and comes equipped with a 207M-byte disk drive, 16M bytes of memory, 8-bit audio, a microphone and a built-in speaker.

It is based on Texas Instruments, Inc.'s MicroSPARC 50-MHz microprocessor, which is a highly integrated, low-cost reduced instruction set computing chip.

The MicroSPARC processors are now shipping in the "tens of thousands" of units per quarter, TI officials said last week. In quantities of 10,000, TI sells the MicroSPARC at $179 per chip.

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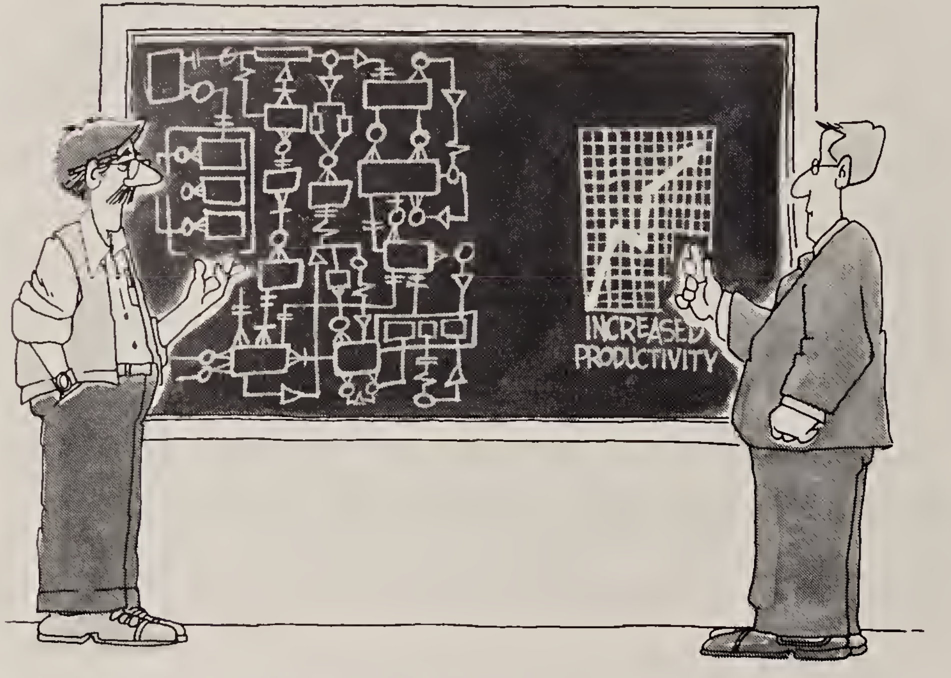

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# White Paper

the YankeeGroup

# Open Systems:

# The User Reality

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## Introduction

"Power to the User" is a familiar rallying cry, even though it is more frequently written than spoken. Users, however, usually assert themselves more with actions than with words. When PCs became widely available in the early 1980s, users implemented them throughout their organizations while nervous MIS managers pleaded for order. And when LANs became available as a means of linking PCs a few years later, users moved ahead, buying and implementing while IS managers again sounded dire warnings.

This user-driven technology evolution constantly bumps the technology curve forward even as it threatens the popular notion of "Information as a Corporate Asset." Sitting high above the fray, chief information officers realize that the only way to productively harness the energy of this push-pull process is through the implementation of enterprise integration. They also know that open systems are the key to that integration.

Reality dictates that truly open systems can only be realized when vendors and users agree on what they are. The most likely vehicle for bringing about such a consensus is standards, both de facto and official. Standards are somewhat like Santa Claus and the Tooth Fairy: if you believe in them, they are real. Thus the rush by a dizzying array of vendor- and user-sponsored organizations to promulgate their ideas of reality to a skeptical and confused IS world.

This welter of would-be standards may be confusing, but the basic characteristics of standards-based products in the emerging open systems market are clear: they must be portable, scalable and interoperable. This means they must be compatible with the multi-vendor environments that dominate today's IS landscape.

The migration path from proprietary to open systems is a perilous one, as users strive to maintain their legacy systems while moving into a more open world. There are tough decisions to make and harrowing political battles to fight. Despite the risks involved, however, the only sure way to lose in this dynamic environment is not to play. The power is waiting for users, but they must grasp it.

*This White Paper was written independently of the* Computerworld *editorial department by Susan McGarry, Vice President of Computer Research with the Yankee Group.*

*For more information on the White Paper Program, please call 508-879-0700.*

# Open Systems: The User Reality

Whether it is Goldman Sachs accessing worldwide trading information, Shell communicating the price of crude oil, or Nissan starting a design change that will affect facilities in Japan, India, England and the United States, today's business environment is global and distributed. This competitive atmosphere demands more responsiveness and flexibility than ever before. It also demands open systems.

Successful companies must possess the ability to give customers what they want, when they want it. This requires changes for everyone who directly supports the customer or the back office. There must also be changes in the ways companies deal with their suppliers and their customers. Open systems will play a major role in enabling these changes.

Since open systems imply more effective links among current corporate platforms, implementing them results in new access to information, common user interfaces — which save training costs — and a new corporate philosophy of openness. This new "open philosophy" increases speed-to-market while empowering users and customers. It also creates closer ties to the outside, offering new possibilities for networked corporate alliances.

## OPEN SYSTEMS: BEYOND UNIX AND OSI

Open systems can be defined as a set of standards applicable across all platforms and vendors that enables networked users, workgroups, departments, and even enterprises, to work together. This definition emphasizes multivendor, multiplatform capability and user orientation, rather than technology.

A true open system, then, will:

- provide a set of standard relationships
- be relevant across all platforms and vendors
- allow networked groups to work together
- support components from multiple vendors
- be portable
- be scalable
- be interoperable.

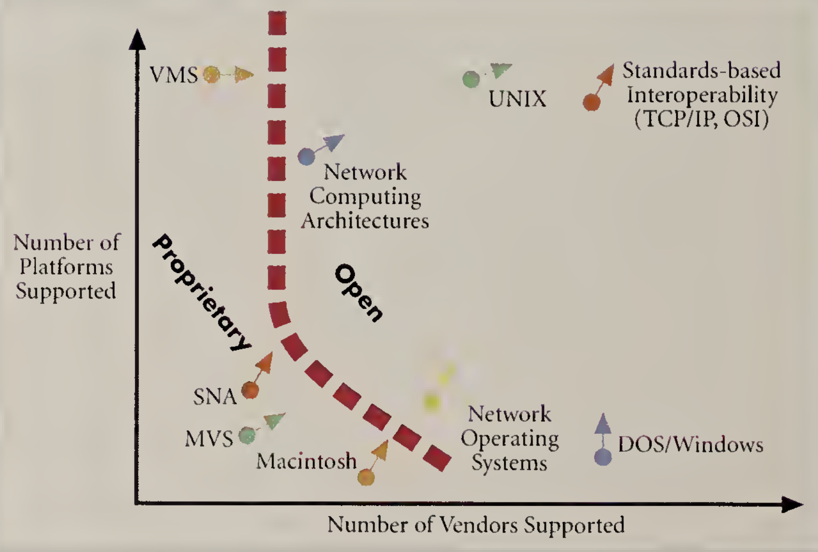
The Yankee Group believes that to be truly effective, open systems must also be based on business needs and facilitate the integration of related future systems.

The dividing line between proprietary and open systems is not a distinct one (Exhibit 1). The identity of an open system depends on how many major platforms and vendors it supports and how close it is to universal interoperability. With enough interoperability and access to applications from other systems, a proprietary system can become open; most proprietary systems are moving in this direction. Simultaneously, however, open systems enablers such as Unix are steadily becoming even more interoperable with other systems, so evolving proprietary systems are playing a catch-up game.

## ENTERPRISE INTEGRATION AND STANDARDS

The Information Technology world has been gaining in complexity, a complexity that is multiplied for most users by their need to support existing systems while adding client/server and mobile computing. By 1995, close to half of the chief information officers (CIOs) in the Yankee 100 expect that 25% of their software development will be done by users. There will be tremendous power on the desktop and plenty of users to implement it.

**Exhibit 1**
**THE BOUNDARY LINE BETWEEN PROPRIETARY AND OPEN SYSTEMS**



Source: The Yankee Group

By 1996, only very large commercial on-line transaction processing systems such as those used for airline reservations will be too complicated to exist on a desktop, in a briefcase or a back pocket.

Currently, "Power to the User" and "Information as a Corporate Asset" are two opposing viewpoints. The CIOs in the Yankee 100 know that these two viewpoints have to be reconciled because of their strategic goal of enterprise integration. It won't be easy.

In fact, these CIOs tell us their number one problem is achieving enterprise integration, and the greatest barrier to that integration is the lack of standards (Exhibit 4). They cite multivendor, multiplatform processing as one of their two most important meanings of enterprise integration (Exhibit 5). The CIOs' first choice in this category is the ability of any authorized person to access and manipulate data from anywhere in the corporation. No matter which definition is used, standards are clearly central to users' IS strategies.

In fact, many IS managers view industry standards as a basis for bridging their disparate systems. Unix is easily the most-discussed open systems enabler. In a series of six seminars sponsored by the Yankee Group across the U.S. in 1992, executives mentioned Unix at least four times more often than any other standards-related entity, including Structured Query Language (SQL) or the Open Systems Interconnect (OSI) model.

When it comes to architectures, today's IS managers want flexibility above all. They are seeking rapidly adjustable frameworks to meet unforeseen changes. Ashok Malik, vice president of operations and systems for American Express, says adaptability is a major goal of his company's open systems efforts. "We are looking for flexibility so that we have an option to change with business needs," Malik explains.

### Standards for Open Systems

The need for new types of standards is driving diversification in the way they are created. The neat world of one national standards body and one overarching international standards body has disappeared. The formal standards process does not move fast enough to keep pace with technological developments. Dating back to the 1960s, published and accepted standards have fallen farther and farther behind the state of the art.

On this fast track, open systems products fall into two standards categories: "de facto" and "leading edge." A de facto standard is software that works on multiple platforms from multiple vendors, and which has become so widespread that most vendors make their software compatible with it. Some of these products become so entrenched that standards bodies feel compelled to embrace them.

**Exhibit 2**
**OVERALL U.S. OPEN SYSTEMS MARKET**
**($ Billions)**

| | 1990 | 1991 | 1992 | 1993 | 1994 |
|---|---|---|---|---|---|
| Interoperability | .5 | .7 | .8 | .9 | 1.1 |
| Open Hardware, System Software | 6.1 | 7.8 | 9.1 | 11 | 12.8 |
| Open Applications, Tools | 1.0 | 1.2 | 1.4 | 1.8 | 2.4 |
| Open Service, Support | 3.3 | 3.7 | 4.2 | 4.8 | 5.6 |
| **Total** | **10.9** | **13.4** | **15.5** | **18.5** | **21.9** |

Source: The Yankee Group

A leading-edge standard doesn't codify technology, it creates it. More specifically, it establishes a high-tech target ahead of current vendor offerings and encourages, and often helps, vendors to close that gap. The Object Management Group's (OMG's) work is a good example of this phenomenon. OMG has spent much time defining the interaction of objects across networks, and deriving an Object Request Broker (ORB) paradigm. It has also helped vendors resolve differences in ORB functions.

**Exhibit 3**
**SIGNIFICANT UPCOMING TECHNOLOGIES & STANDARDS**

| Technology/Standard | Key Date | Vendor Offerings | Significant U.S. Market Presence |
|---|---|---|---|
| DCE – DCA | September 1991 – released | (OSF) IBM, Digital, HP, other OSF members | 1993 |
| DME – Net & Systems Management | 1993 | (OSF) IBM, Digital, HP, other OSF members | Late 1993-94 |
| POSIX – OS Portability | 1992 – VMS "POSIX-compliant" (first major non-UNIX OS) | Major vendors have committed to it | POSIX subcommittees have had trouble completing their work; however, modifications by vendors for "POSIX compliance" are making OSs more open |
| SGML (mark-up language) | 1992 – Significant implementations | Major vendors (CALS) | 1993 or beyond |
| EDIFACT | 1992 – European customs implementation | Major vendors have committed to it | 1992 |
| X.400/X.500 – E-Mail | 1992 – Definitive X.500 standard | Mostly gateways | 1993 or beyond |
| X/Open – TP Standard | 1992 | Unisys has anticipated the final standard | |
| SQL Access API | Early 1991 – Standard completed | None | 1992-93 |
| UI-ATLAS – NCA | 1993-94 – Released | UI/USL members, AT&T-NCR, Sun, others | 1995 or beyond |
| ANDF (OSF) | Delayed, expected 1993 | OSF | 1993 or beyond |
| ORB (OMG) | 1992 – First implementations | Hyperdesk, Sun/HP, Digital, others | 1993-94 |
| OSF/1 | Mid-1991 – Released by OSF | (OSF) Digital and some others | 1993 |

Source: The Yankee Group

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We recently used the lab to help Ametek Corporation build an open system that's in synch with the company's re-engineering plan. Says Bill Lawson, Director of Business Systems, U.S. Gauge division of Ametek, "IBM's design work was absolutely outstanding. So good, in fact, we're having them implement the whole system. Everything's getting connected—IBM, DEC,® HP,® all kinds of PCs and PC LANs—in a timely manner and well within our budget. IBM truly is our partner in networking and open systems. We got much more than we expected."

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trol Protocol/Internet Protocol (TCP/IP) and Simple Network Management Protocol (SNMP) over the International Standards Organization (ISO) Transport Level 4, and Common Management Information Services/Common Management Information Protocol (CMIS/CMIP) in the U.S. market, are victories for de facto over official standards. This shows that users prefer an available, inexpensive, multivendor solution over one that may be internationally blessed but which is less accessible.

## DIVERGENT APPROACHES TO CREATING STANDARDS

There are now three types of standards groups:

- traditional standards bodies such as the ISO and the National Institute for Standards and Technology
- vendor consortia such as the Open Software Foundation (OSF) and Unix International Incorporated (UI)
- user groups such as SOS, Open User Recommended Solutions (OURS) and National Microcomputer Managers Association (NMMA).

The second and third groups will have the most impact on the future of open systems.

### Vendor Consortia

The outstanding examples of consortia with significant effects on open systems are OSF, UI and OMG. OSF and UI, starting from the Unix area, have extended their scope to cover multiplatform solutions, particularly in the areas of distributed computing architectures (DCAs) and network management. OMG has staked out a niche in the surging object-oriented area, concentrating on network computing and interoperability using object-oriented programming.

By setting forth multivendor roadmaps and statements of direction, OSF and UI have established themselves on the leading edge of open systems. OSF/1, OSF's version of Unix, is subscribed to by IBM, Digital Equipment, Hewlett-Packard and other major OSF members.

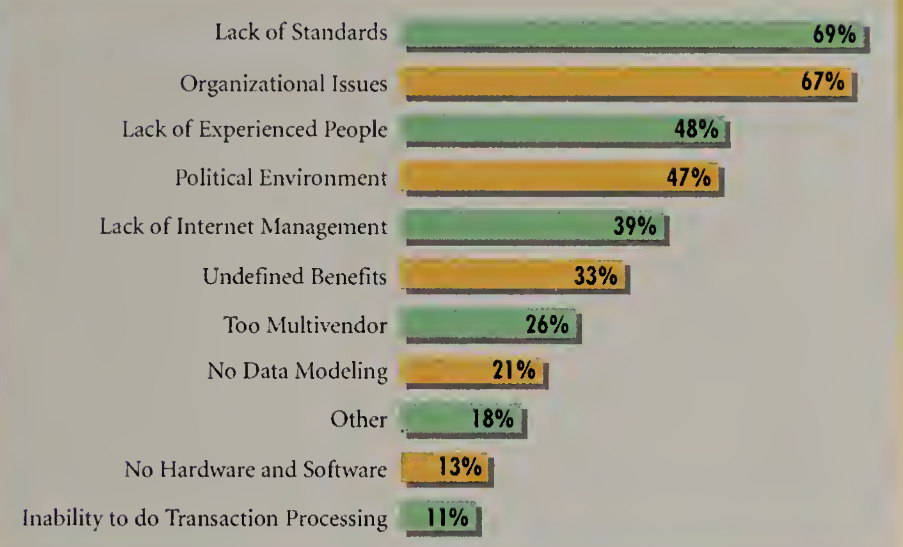

**Exhibit 4**
**IMPEDIMENTS TO ENTERPRISE INTEGRATION**

Source: The Yankee Group

OSF's Distributed Computing Environment (DCE), which provides basic services for cooperative processing, and the Distributed Management Environment (DME), which provides management tools for heterogeneous environments, are seen as the DCA building blocks of the future by many vendors and users. UI's distributed computing specification encompasses DCE and DME and offers further alternatives and services.

Vendors such as HP and Unix Systems Labs are increasingly building cross-graphical-user-interface tools that support both OSF's Motif and UI's OpenLook graphical user interfaces (GUIs). In terms of operability, DCE and DME are much nearer to implementation than UI's UI-ATLAS. In terms of portability, OSF may be taking the lead. It already claims several ports to non-Unix operating systems. The problem of integration with PC LANs remains, however, because these DCAs have not yet been included in popular network operating systems such as Novell's NetWare and Banyan Systems' Vines.

### User Groups

User groups that attempt to define broad directions for vendors in open systems are relatively new and potentially powerful, but still not clearly effective. Prominent among these have been the User Alliance for Open Systems, SOS, OURS and the NMMA.

SOS is a group that declined to adopt a formal name, although SOS has been variously interpreted as "Standards for Open Systems," "Save Our Systems" and "Support Our Systems." Also known as "The Gang of Ten," this group of users decided to use its combined buying power — estimated at $15 billion annually — to influence vendors in support of open systems.

> *The next two years should see a substantial number of new standards and implementations that will have a major impact on the open systems market.*

The participating companies are: American Airlines, Du Pont, General Motors, Eastman Kodak, McDonnell Douglas, Merck, Motorola, 3M, Northrop and Unilever. Many of these companies are also heavily involved in the activities of the formal standards groups. Their goal is twofold: get ven-

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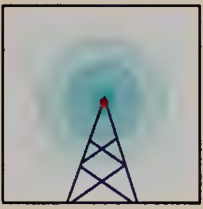
## Volpe National Transportation Systems Center Driving Open Systems



The Volpe National Transportation Systems Center is a research and development arm of the U.S. Department of Transportation. It develops air traffic control software for the Federal Aviation Administration (FAA). This software is also made available to commercial airlines, the U.S. Air Force and other countries.

The Volpe Center's Enhanced Traffic Management System (ETMS) presents real-time flight and weather data to traffic controllers, alerting them to likely areas of congestion. It can show as many as 6,000 flights simultaneously.

The ETMS was originally conceived as a prototype, but is now in daily operation. It is built on several hundred networked Hewlett-Packard Apollo workstations and includes more than 750,000 lines of Pascal code. Based on distributed computing technology, this money-saving system has built-in redundancy that keeps the network up if a workstation goes down.

The Volpe Center is an active member of the Open Software Foundation (OSF). It is on the OSF End User Steering Committee, a group of international users providing OSF with input on their open systems requirements. Volpe currently has an interoperability lab, where it is testing IBM's AIX using Motif, Digital Equipment's Alpha series computers running OSF/1 — the OSF version of Unix — and Hewlett-Packard's UXF/1 connected by TCP/IP running over Ethernet. This test is part of the Volpe Center's transition to a more open system.

Volpe is committed to open systems, not only because it is part of a government agency and must therefore follow U.S. government procurement practices, but for real business reasons. It wants to be in a position where it can procure from any number of vendors and save taxpayer dollars by leveraging one vendor against another.

The Volpe Center's most critical requirement is portability. Because technology transfer is the center's business, it wants to port applications from one vendor to another as easily as possible. Robert Chew, a consultant at the Volpe Center, believes the pragmatic approach of OSF to developing worldwide standards will help the center with its plans to transfer its software and systems to international organizations.

Heterogeneous interoperability is very important to Volpe as it moves to a new generation of its distributed system. The center's current multivendor testing approach is rapidly enabling it to do that effectively. To that end it is relying heavily on OSF's Distributed Computing Environment (DCE), and Distributed Management Environment (DME).

dors to produce the products that meet their needs, and state publicly their commitment to, and plans for, support of open systems. Currently, the Gang's requirements statement consists of 25 profiles in eight different categories.

The next two years should see a substantial number of new standards and implementations that will have a major impact on the open systems market. Many standardized products are scheduled to appear in 1993.

### BENEFITS AND CHALLENGES

The benefits of open systems are manifest. Among the most notable are portability, scalability and interoperability. None of these, however, is easily realized. For instance, as Unix variants proliferate, universal application portability recedes. And scalability is an increasing concern because open systems are often associated with downsizing. Downsizing to PC and Unix workstations often means moving to new platforms not seamlessly connected to the corporate mainframe. In this dynamic environment, interoperability via distributed computing has become the open systems method of choice for both vendors and users.

IS control is another benefit of open systems computing. As "rogue computing" — the unmanaged proliferation of PCs and LANs — continues, IS is shifting its emphasis from control to redesign and flexibility. Recent Yankee 100 surveys show that CIOs view business process redesign as an increasing priority. The Yankee Group asserts that management of change may be the key computing concept of the 1990s.

Open systems do, when applied intelligently, save money. Lacking a solid business reason or cost-benefit analysis, however, they may also be money losers.

### THE STATE OF INTEROPERABILITY

As users increasingly focus on enterprise-wide integration, the importance of interoperability between platforms grows.

There are two steps to interoperability. The first is unlocking communication to a platform, and the second is unlocking the applications and data on the platform. By placing de facto standard communication protocols that provide wide intervendor connectivity — such as TCP/IP — on a platform, vendors instantly make that platform far more open. Because a standard like TCP/IP allows file transfer and terminal emulation, unlocking the communication instantly allows rudimentary access to a platform and data. Both Motorola and Texaco, for example, are moving to TCP/IP to achieve this first step toward interoperability.

The second and more difficult step

— unlocking applications and data across the enterprise — is the task of distributed computing. Standards available for distributed computing include OSF's DCE. Vendors have much to accomplish before they can provide all the tools needed to achieve this second step. Essentially, every important node in an enterprise-wide network (usually, every server) must have a common piece of distributed computing and management capability, and applications must be built or rebuilt to use those pieces as a foundation for enterprise-wide information access and manipulation.

The management pieces — supplied by distributed computing architectures such as Digital's Network Application Support (NAS), OSF's DCE and DME and UI's UI-ATLAS — are at least a year from availability, and are much further from full functionality. Clearly, systems open enough for data and application access are still in the development stage. Users also face a great deal of work in redesigning their systems to take advantage of these distributed computing architectures.

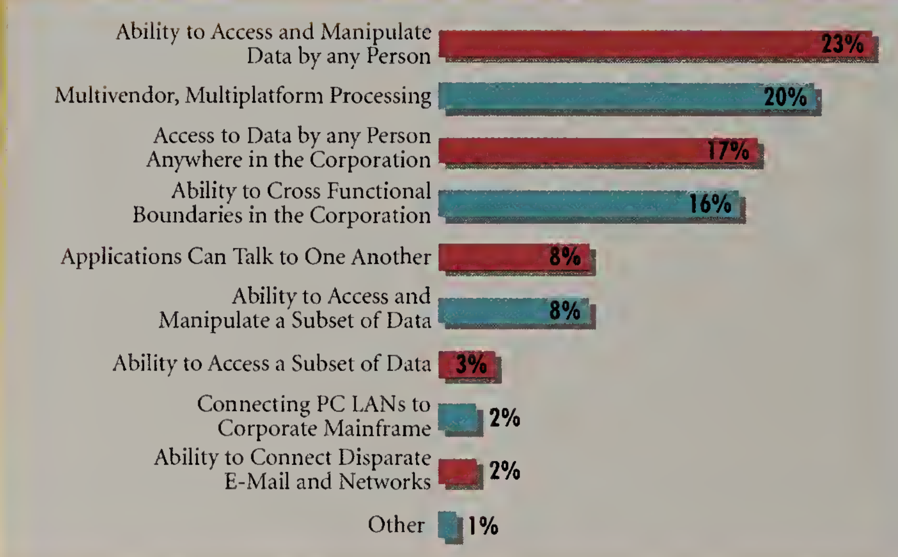
However, as Steven Jenkins from the Jet Propulsion Lab points out, in some cases there is enough technology now for users to make significant progress. He says, "I'm ready to begin prototyping and testing DCE. The lack of availability of DME is not an impediment. I need to enact change in my organization before I can proceed much further." As an early adopter of distributed systems in another part of JPL, he struggled with building distributed solutions without DCE-like tools. "I got attracted to DCE after that experience, after we had built our own. I could look at the framework and the elements underneath and say, yes, the core capability is there."

## INTEGRATION WITH LEGACY SYSTEMS

Most users still see value in their legacy systems. They want to link the new open systems they are developing to their legacy systems, and find ways to migrate some portion of the old to the new. This is a crucial issue for Malik at American Express, who says, "How do we migrate from the legacy systems? How is data shared? How do we do training and change management?"

Exhibit 5

MOST IMPORTANT MEANINGS OF ENTERPRISE INTEGRATION



Source: The Yankee Group

Despite his doubts, Malik believes that open systems will become a reality for him in the next twelve to eighteen months.

The Yankee Group believes the key to solving the old-application dilemma involves focusing on a "one-user-interface" strategy, what Aetna calls "one and done." That is, IS managers are increasingly emphasizing open systems not as an end in themselves, but as a means of delivering multiple vendors' value to the end user.

To do this effectively, the end user needs to be able to access multiple systems through one user interface whether that is Windows, Motif or OpenLook. By specifying a look and feel, as well as the solutions to be delivered through the interface, users such as MetLife are finding all of their open systems decisions greatly simplified. They are achieving business process redesign and a clear way of deciding how and when their old applications should be modified.

## THE PATH TO OPEN SYSTEMS

Vendors are providing software and hardware that can be networked and is standards- and Unix-based. IBM, Digital, HP, Siemens, Data General, Novell, Microsoft, and Sun all offer Unix hardware and/or software. They also offer adherence to OSI and X/Open standards in addition to supporting common application program interfaces. Further, these firms support DCAs based on a wide array of standards. Moreover, vendors are paying increasing attention not just to de jure standards but also to de facto standards. Currently the biggest difference among open systems vendors is the quality of their migration and multivendor integration products.

The open systems race is not a sprint, but a marathon. It requires pacing and a strategy to make it to the finish line.

Over the next five years, the milestones for users will be:
- improving interoperability
- provision of a valid migration path
- portability
- scalability.

## Quaker Oats Looks for a Better Systems Mix

Quaker Oats Co. recently installed a Unix-based system at its Jacksonville, Tenn., Celeste Pizza plant. Since installing this open, hardware-independent system, the company has realized a number of money-saving, productivity-enhancing benefits.

The business decision to replace its aging system of Burroughs, Hewlett-Packard and Digital Equipment computers at the Celeste plant was tied to the need to replace its existing Statistical Process Control (SPC) software. In particular, the project sponsors wanted to streamline data collection and provide near-real-time feedback. The company believed the plant, which produces 45 million pizzas each year, could save money by more closely controlling its use of ingredients.

The need for a new system was also driven by the fact that the Food and Drug Administration and United States Drug Administration monitor separate areas in the plant. Representatives of the two agencies wanted to be able to review data without operating in each other's territory.

The old system was unable to efficiently deal with the daily reams of paper-based Quality Assurance data providing feedback on the preceding day's run. Someone back on the plant floor would view the data, and then have someone else key it into a PC or similar repository. During this process of multiple individuals shuffling through the data, some errors were inevitably made.

In addition to realizing speedier, more accurate data handling, the group wanted to make the data more widely available and easier to use. Toward this goal, a number of employees from the plant floor were involved from the beginning of the project.

### Selecting the New System

In specifying a new system, the decision was made to choose the best hardware and software whether or not it was compatible with the old system. Among other things, the project team was looking for lower costs, more flexibility and quicker access.

Because the team wanted an open system, it decided to seek a Unix-based platform. It also wanted a hardware-independent system able to use packages that run on PCs from IBM and Compaq, as well as computers from HP and Digital Equipment.

Although the team was seeking something new, it also wanted to draw on proven technology. With that in mind, it wanted an Oracle database that could be accessed through SQL. While shopping for software and the expertise to run it, the team examined some 29 packages, finally settling on Production/Management Information Systems (PMIS) from Bradley Ward. The package combines the process control and management functions required for the new system.

After the hardware evaluation was finished, the team selected HP 9000 processors to complement the software. As a result, PMIS now resides on an HP 9000/832. An HP 9000/345 runs ORACLE/SAS. Connectivity is provided by an HP Vectra running TCP/IP.

PMIS allows operators on the plant floor to enter a product code and time frame, and then monitor running conditions during that time frame. The plant lab, which samples and analyzes pizza, has an HP 9000/345 workstation running X Windows to provide similar access.

### Benefits

Since installing the system, Quaker Oats has realized the benefits it hoped for, including:

- cost savings due to weighing accuracy
- improved quality due to weighing accuracy
- immediate quality feedback
- appropriate data readily available to government agencies.

Once the new system was implemented, the team took an initial group of 25 employees who had helped design it, trained them in operations and gave them the responsibility for training the remaining employees.

The project team is now reviewing other software packages for future improvements. It is also building on this system by allowing the old Digital Equipment VAXes to interface with the new HP system. When this is accomplished, anyone with a terminal or PC will be able to interface with the new system.

Users will be able to rely increasingly on a common base technology, but they will need skill and vigilance to select and integrate the products and protocols that will provide optimal interoperability, portability and scalability.

Users should prepare themselves for the open systems marathon by taking the following steps:

1. Examine the payback. Although the integrated, distributed enterprise may be a few years away, there is an immediate cost benefit for many in open systems today.

At General Foods USA, technical decisions have to be tied to a specific benefit, and cost is always an issue. Project team members there estimate

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## Duke Power Co. Uses a Team Approach to Achieve an Open System

Duke Power Co., based in Charlotte, N.C., wanted to make real-time, on-line monitoring available to select groups of employees. The company, which operates a variety of nuclear, hydroelectric and fuel-fired power plants in the Carolinas, also wanted to monitor on-line data at remote sites using only a portable PC with a modem.

In order to realize its goals, Duke put together an open architecture-based system that runs DOS, OS/2, Unix, or VMS. It also uses the DECnet and NETBIOS network protocols and employs multiple relational database products, including OS/2 DBM, ORACLE, and DB2. The system was christened Total Operating Plant Process System ( T.O.P.P.S.)

Duke put together a multidisciplinary team that was involved in the project from beginning to end. Team members came from different plants, and included end users (operators), design engineers, maintenance staff, IS personnel, training staff and technical support people.

Like General Foods and other astute large customers, Duke insisted that its vendors—IBM, Intellution, and Computer Products Inc. (CPI)—work together to provide the solution it desired. The vendor contacts were also considered part of the company's development team.

The team initially hoped to be able to use a system based on the seven-layer OSI Basic Reference Model. However, at the time it was designing their system, in the autumn of 1991, there simply were not enough OSI-compliant products available to run the gamut of Duke's needs.

Duke chose Intellution's process control software product, the Fix, and also its DMACS networking software. In electing to use NETBIOS, the utility incorporated extensions to NETBIOS, which allowed the Fix to be run remotely via a modem-equipped portable PC. Thus, one of the utility's primary goals was realized.

One of the attractions of Intellution's product was that the software was already running on OS/2 and VMS. Adding OS/2 to VMS gave the team another option and made the overall system more open.

A decision was made to first implement the system at one plant, where it could be fully implemented and tested before being extended to other plants. The project took less than a year to devise, build, and test.

Each plant has multiple nodes running on Token Ring LANs. A fiber-optic WAN backbone provides communication between plants. In-plant screen updates occur within two seconds. The distributed system monitors 5,000 I/O points, and provides 3,000 additional computed variables. Since NETBIOS can run simultaneously on multiple networks, all plant data is available to the LAN and WAN users. Five plants have been interfaced to the fiber-optic WAN so far, and the system will support future additions.

they are getting up to 10:1 improvement in price performance with open systems.

They also believe that open systems make it possible to perform jobs for $100,000 that formerly weren't possible at any price. Steven Jenkins of the Jet Propulsion Laboratory has effectively argued to his management that the cost of ownership of some of the 20-year-old equipment that currently supports the Deep Space Network (DSN) is higher than the cost of acquiring open systems. In its draft of top level requirements for the DSN, his organization is recommending POSIX — the IEEE's Unix implementation — and TCP/IP.

*Evaluate your vendors on their commitment to open systems.*

2. Implement in one area, measure results, and then decide whether to proliferate. Both General Tire and Duke Power have espoused this strategy. Duke has rolled out its open architecture Total Operating Plant Process System to five locations thus far (See sidebar, this page). General Tire has implemented in one location and is now expanding to three.

3. Evaluate your vendors on their commitment to open systems, and that means more than determining whether they offer Unix. How big is the gap between their proprietary and open offerings? What migration tools do they offer to help you move from their proprietary to their open systems offerings? How much do they really integrate with other vendors' products? Pay particular attention to the degree to which their tools, applications and utilities are open. These are more likely to be stumbling blocks than hardware or operating systems.

4. Manage your vendors. General Foods is working with fewer vendors but demanding more from them. Management there has sent a clear message that making systems interoperate is mostly the vendors' responsibility.

5. Provide feedback on the standards that will enable distributed computing architectures. Leading-edge users may want to participate in a vendor's beta offering of DCE or DME; the more risk-averse may simply make sure they are informed about the progress of OSF, X/Open, SOS and OURS.

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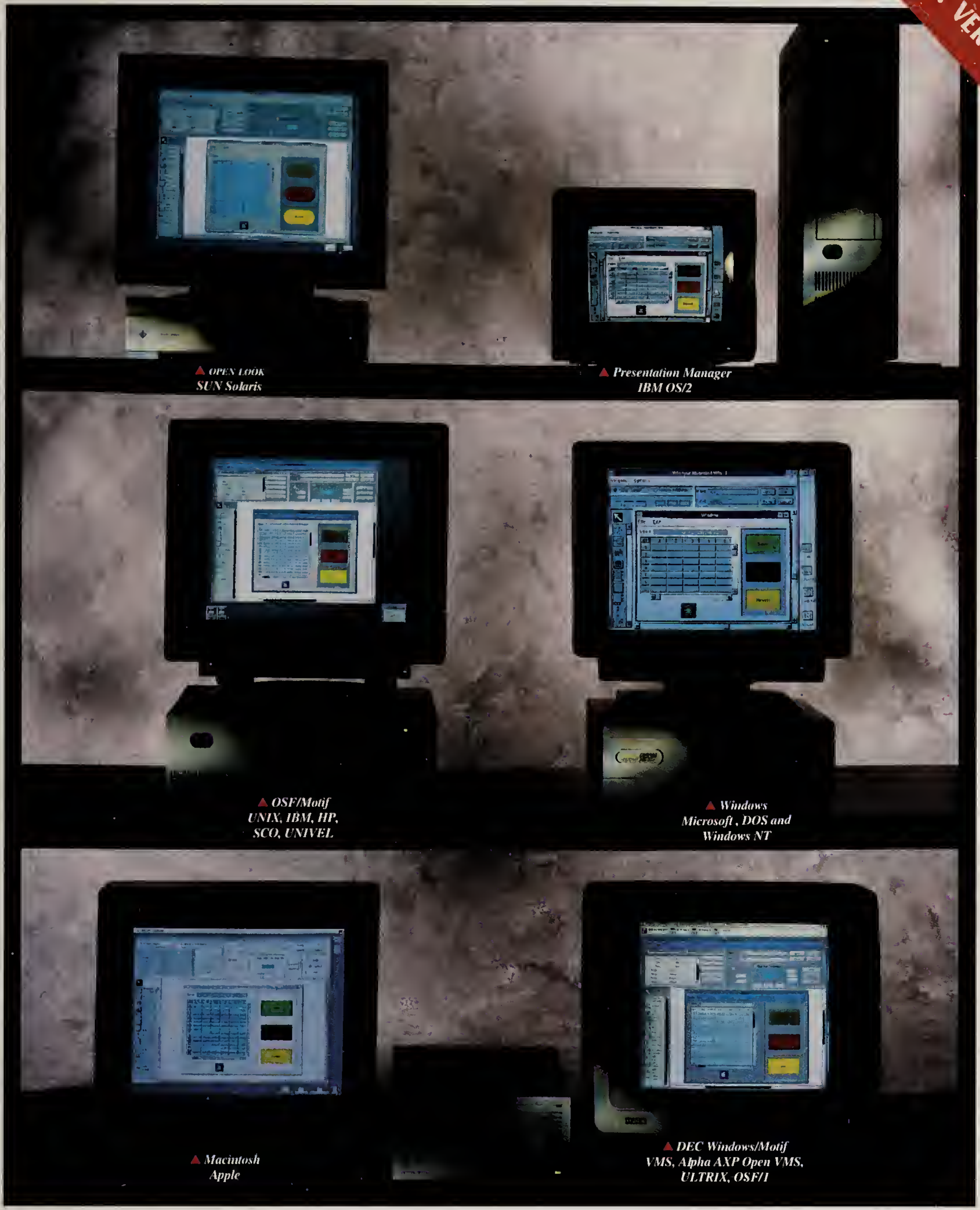

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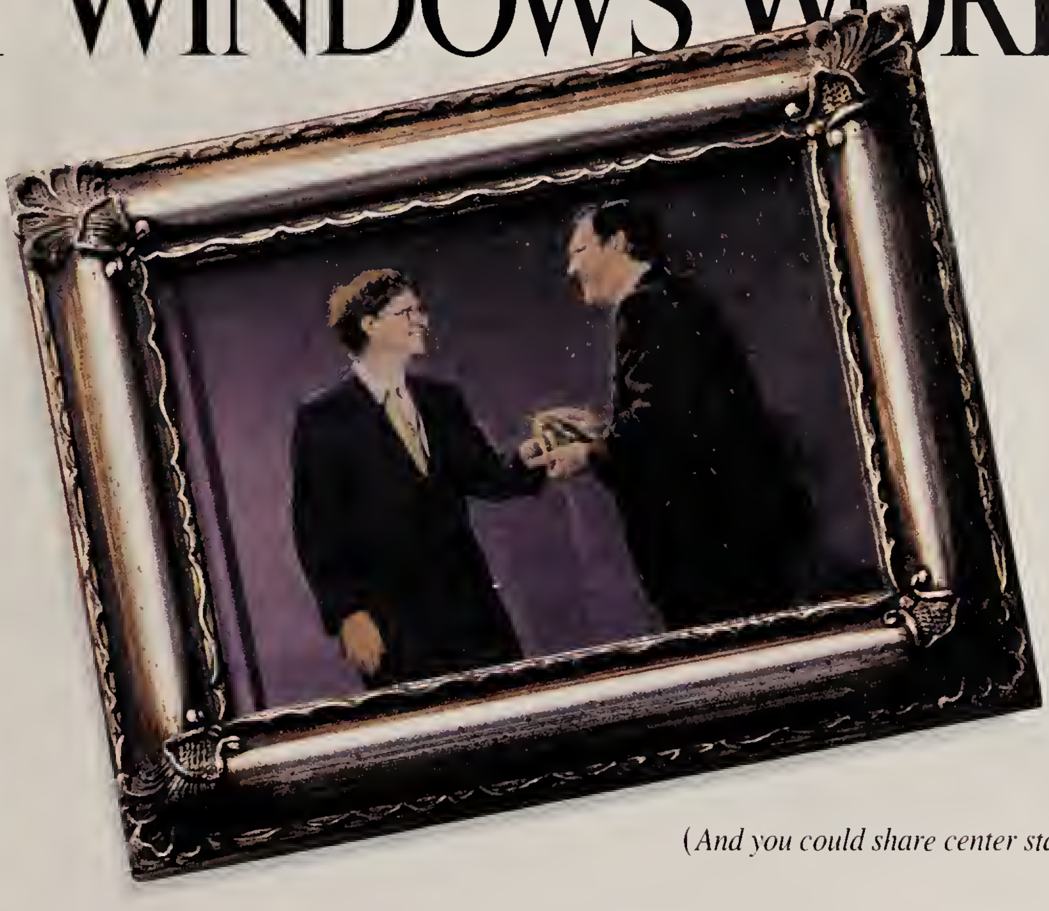

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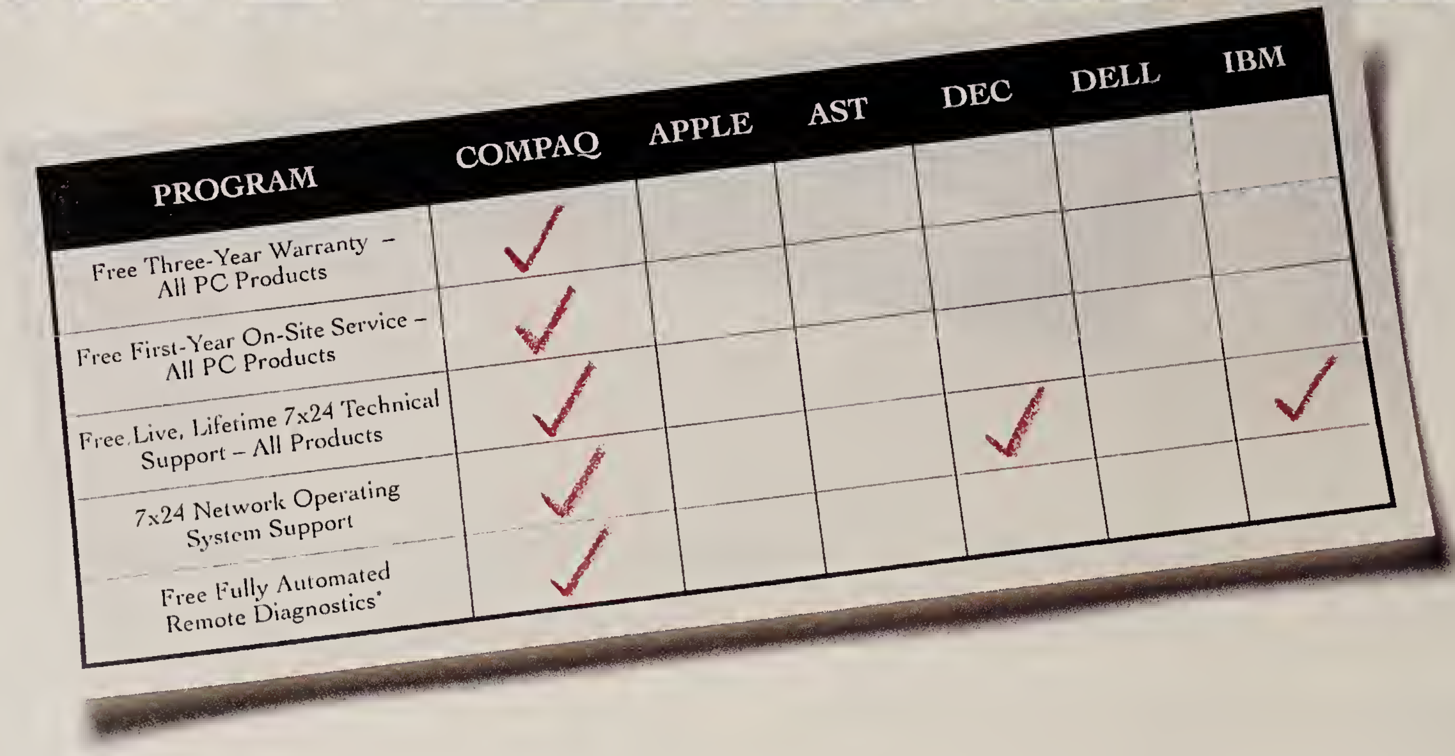

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# Lotus' Notes 3.0

CONTINUED FROM PAGE 37

The only server environment Notes now supports is the 16-bit version of OS/2.

Network protocols that will be supported include Apple's AppleTalk for Macintosh clients and OS/2 servers, native Novell, Inc. IPX/SPX support for Windows and OS/2 systems, Transmission Control Protocol/Internet Protocol for OS/2 and Unix systems. Notes already supports IBM's Systems Network Architecture and Digital Equipment Corp.'s Pathworks.

Complementing the wider range of platforms supported under Notes 3.0 will be enhancements to the work-flow, versioning and routing capabilities of Notes 3.0, improvements to Notes macros, support for the Object Linking and Embedding protocol and a published Notes application programming interface for linking PC applications to the Notes database.

Also included will be support for CC:Mail transports, a database lookup function across Notes databases and SQL databases, replication services among Notes databases and the ability to create 1G-byte databases using the Notes object-oriented file system.

The initial release of Notes will provide support for a full-text retrieval server engine based on technology supplied by Verity, Inc., a Mountain View, Calif., subsidiary of Frame Technology. In addition, support for the version control feature to be added to 1-2-3 for Windows Version 2.0, due in the second quarter, will be in the initial release of 3.0.

According to Conneighton, all of the core features of Notes 3.0 will be available when the product is launched, and customers will be able to use Notes 3.0 for "large-scale, mission-critical applications."

However, users looking to build complicated work-flow applications on top of Notes 3.0 will have to wait for the arrival of support for Advanced Technologies, Inc.'s (ATI) work-flow software, which Lotus bills as an add-on component of Notes.

Notes 3.0 will have enough work-flow software built into the kernel to support straightforward applications, but customers building mission-critical applications where there are "anomalies" in the work-flow process, such as exceptions or parallel tasks, require the ATI software, Conneighton said.

"You can think of the ATI software as a CASE tool for building work-flow applications," said Conneighton, who declined to specify when the ATI software would be available beyond saying that it is due sometime this year.

The first users of Notes 3.0 will also have to wait for a tool to access data in relational databases that support SQL. The ability to link an SQL database to Notes 3.0 is tied to the inclusion of support for the Open Database Connectivity interface from Microsoft Corp. in Lotus' DataLens query tool.

## In Brief

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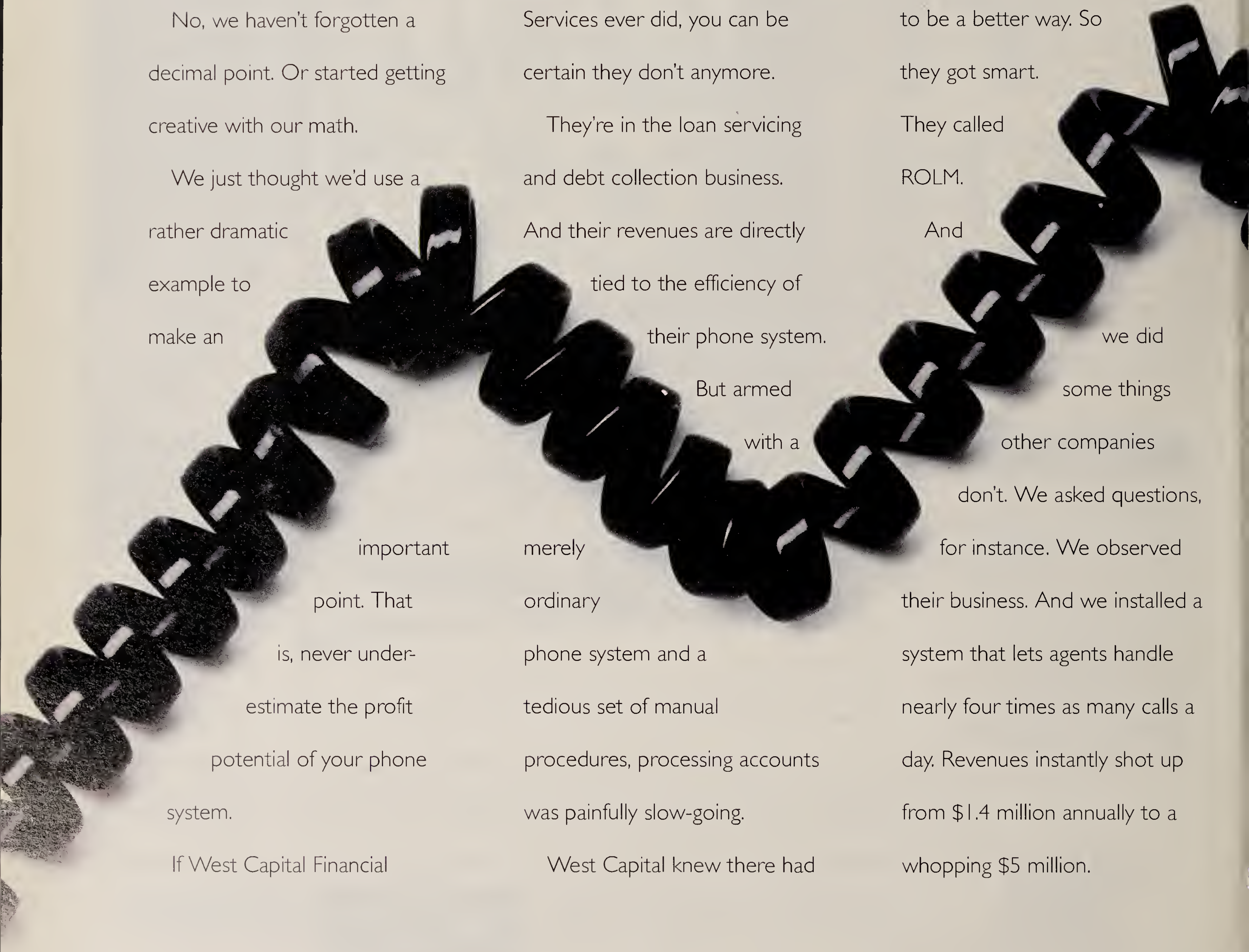

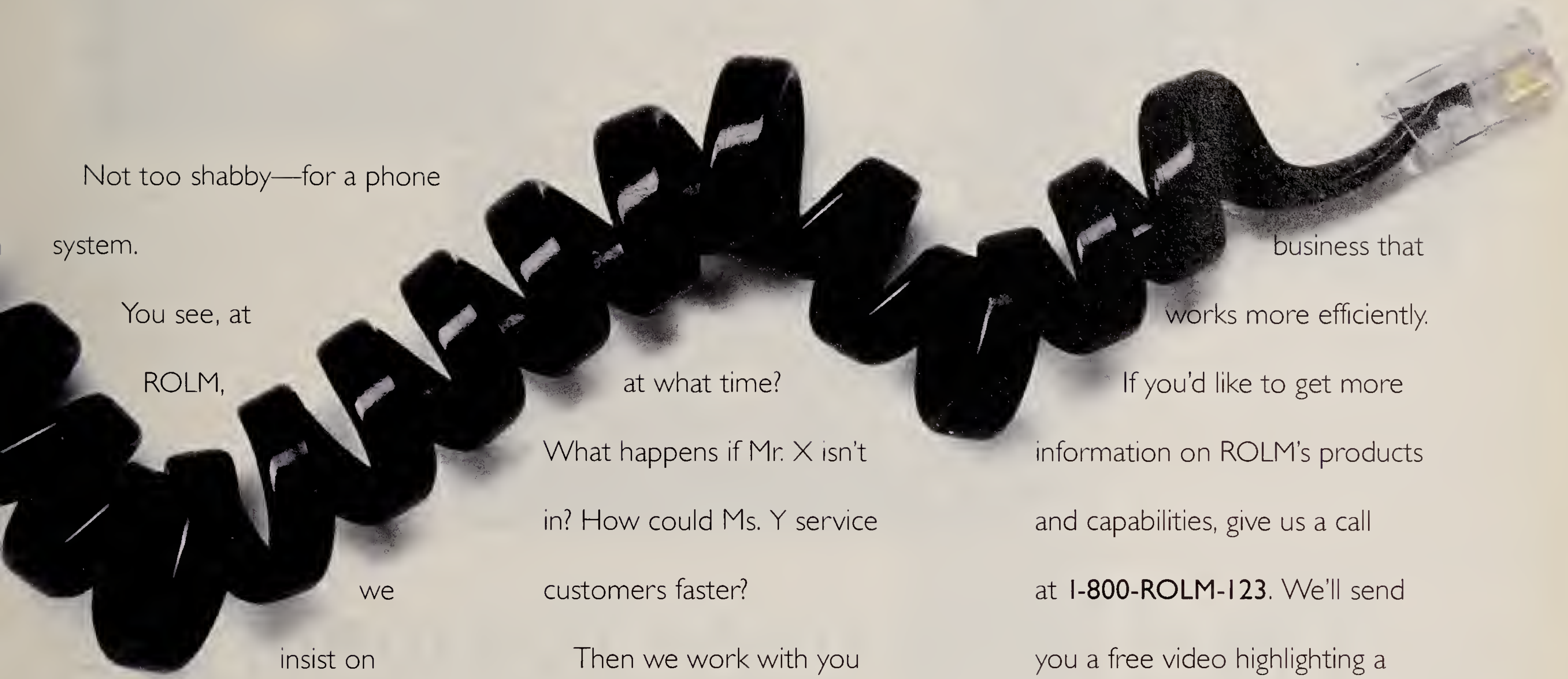

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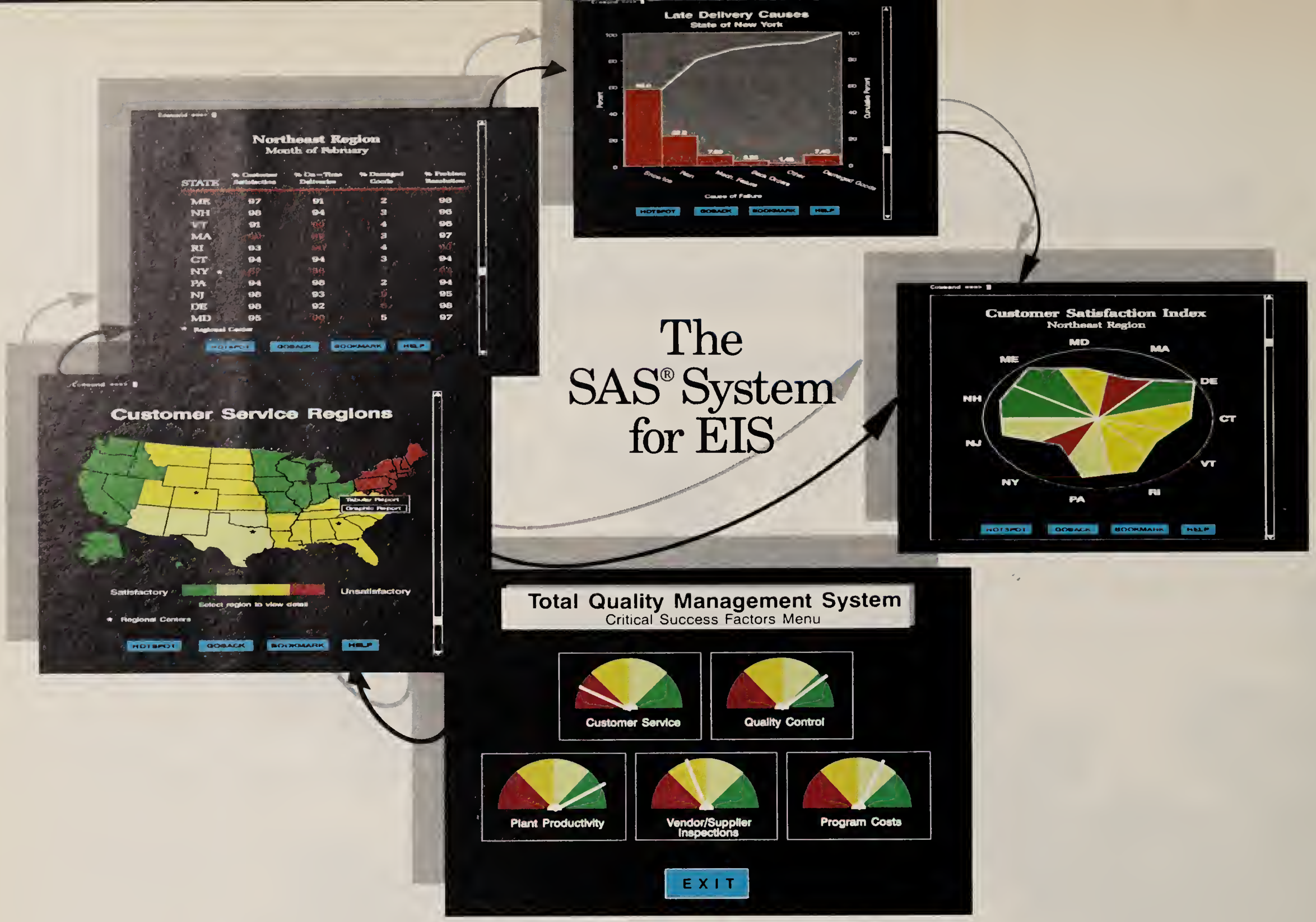

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| STATE | % Customer Satisfaction | % On-Time Deliveries | % Damaged Goods | % Problem Resolution |
|---|---|---|---|---|
| ME | 97 | 91 | 2 | 98 |
| NH | 98 | 94 | 3 | 96 |
| VT | 91 | [illegible] | 4 | 96 |
| MA | [illegible] | [illegible] | 3 | 97 |
| RI | 93 | [illegible] | 4 | [illegible] |
| CT | 94 | 94 | 3 | 94 |
| NY * | [illegible] | [illegible] | | [illegible] |
| PA | 94 | 98 | 2 | 94 |
| NJ | 98 | 93 | [illegible] | 95 |
| DE | 98 | 92 | [illegible] | 98 |
| MD | 95 | [illegible] | 5 | 97 |

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Internetworking
Services
Net Management

# Enterprise Networking

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## Routers make progress in IBM connectivity

By Joanie M. Wexler
WASHINGTON, D.C.

Tweaks to the internetworking cornerstones of corporate data highways — multiprotocol routers — found their way onto the list of ComNet '93 show announcements.

The recent show marked the one-year anniversary of **IBM's** 6611 router announcement, and to celebrate, the vendor added support for its own Advanced Peer-to-Peer Networking (APPN) Network Node protocol. APPN is a key protocol for users migrating from hierarchical Systems Network Architecture (SNA) networks to interconnected local-area networks via IBM's networking blueprint.

IBM also added transparent bridging for linking Ethernet LANs, support of SNA and NetBIOS protocols over Ethernet and Apple Computer, Inc. AppleTalk protocols to the 6611. Company officials said Banyan Systems, Inc.'s Vines is on deck as the next protocol to make its way onto the device.

Meanwhile, IBM-oriented router maker **CrossComm Corp.** said it also added APPN support to its router. CrossComm and IBM router capabilities rival each other, as each runs proprietary schemes for rendering SNA "routable."

Also on the IBM front, **Network Equipment Technologies, Inc.** said it has added new software to its LAN/WAN Exchange router that supports SNA Synchronous Data Link Control conversion and source-route bridging local acknowledgments.

The second capability, available on several other vendors' routers, addresses a "time-out" limitation in large Token Ring internetworks. The source — or sender — of data requires an acknowledgment by the receiving station within a few seconds or the transmission dies. This

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Routers

## IBM 6611 links Missouri sites

By Joanie M. Wexler
JEFFERSON CITY, MO.

An overhaul of Missouri's transportation infrastructure has driven the state to link local-area networks in its headquarters and 10 district offices. The goal: to allow users on far-flung Token Rings and host-based networks to share research and test data.

To that end, the Missouri Highway and Transportation Department recently installed IBM's nascent 6611 multiprotocol router as the internetworking glue.

The department is bridging IBM's Systems Network Architecture (SNA) and NetBIOS protocols and routing Internet Protocol (IP) through the 6611.

While analysts have predicted that the 6611 would find its niche primarily in IBM-heavy shops — and Dave Johnson, end-user support coordinator at the Missouri agency, acknowledged that "our network is so Blue we look like an inkwell" — Johnson said he chose the 6611 primarily for its management and configuration capabilities, his top internetworking priorities.

"You just shoot router updates directly from the RS/6000," Johnson said. "It's very understandable and straightforward. We have only been doing TCP/IP for 18 months on a limited scale, and I was worried about the learning curve. IBM stood out as a configuration tool compared to other router vendors."

### Simple as 1, 2, 3

The simplicity derives from the 6611's foundation on IBM's RISC System/6000 platform. The agency is converting its geographic information systems and drafting software, now running on a 9370 midrange computer, to about 200 RS/6000s and some high-end PCs running the X Window System protocol, Johnson explained. The RS/6000, which is Unix-based, handles router configuration through X.

In addition, the router is manageable by the systems in use at the agency: LAN Network Manager, NetView/6000 and NetView.

"As this network grows, I want to keep management as centralized as possible and focus my staff on servicing users rather than having them spend a lot of time monitoring network management software," Johnson said.

A $200,000 budget for LAN integration at the department — awarded largely because of pressure from a non-information systems group of materials and research testing personnel — has so far included the purchase of eight 6611s, the upgrade of the agency's IBM front-end processor from a 3720 to a 3745 and NetView/6000 and NetView management software, Johnson said.

In addition, Johnson said, the department is likely to purchase two RouteXpander/2s, a $795 software-based remote router compatible with any Micro Channel Architecture PC that runs the IBM OS/2 operating system. The department will use the RouteXpander/2 for routing Transmission Control Protocol/Internet Protocol (TCP/IP) traffic from smaller sites over frame-relay lines.

The RouteXpander/2 usurped IBM source-route bridges for certain links because the bridges do not handle TCP/IP traffic generated by the RS/6000, Johnson said. Bridging can often be faster and cheaper than routing in simple internetwork configurations.

A $200,000 budget for LAN integration at the department — awarded largely because of pressure from non-IS groups — so far has included the purchase of eight 6611s and the upgrade of an IBM front-end processor.

The department did a three-month router evaluation that included vendors Cisco Systems, Inc., CrossComm Corp., Proteon, Inc. and Wellfleet Communications, Inc., as well as the option of routing through a front-end processor.

With the last option, "we weren't happy with performance, and there were too many points of management and lots you had to do with VTAM," Johnson said.

"In terms of performance, we found Proteon, Wellfleet and IBM all acceptable; Wellfleet and Cisco were more Ethernet-oriented, and there is no Ethernet in my house," he said. "At the time, Proteon's configuration scheme was more difficult, though prices were comparable" to IBM's, he added.

While the 6611 is seen as a strong choice for IBM shops because of its proprietary Data Link Switching feature — which lets nonstandard SNA be routed — the Missouri department is not using the capability yet.

"There are problems with 9370s with that mechanism," Johnson explained. "We were advised by IBM to look at it," but not to use it right away, he said.

CrossComm has a similar mechanism, which is called Protocol-Independent Routing, in its router, but Johnson said he was attracted to the 6611's reduced instruction set computing platform over CrossComm's Intel Corp.-based architecture.

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## E-mail users turn to BeyondMail for Vines

By Lynda Radosevich

**In an electronic-mail world dominated by Lotus Development Corp.'s CC:Mail and Microsoft Corp.'s Mail, several large firms recently picked BeyondMail from Beyond, Inc. as their standard E-mail package running on Banyan Systems, Inc.'s Vines networks.**

The companies already use Vines' native mail program, but they plan to move some users to BeyondMail to access its "friendlier" interface and advanced E-mail features such as spell checking. In addition, they cited BeyondMail's tight integration with the Vines operating system and its rules-based technology that lets them create personal and workgroup workflow applications.

At The Equitable Life Assurance Society in New York, a life insurance company with $245 billion worth of individual insurance in force, Vice President Bill Lewis is beginning a 500-user rollout of BeyondMail. Lewis said the firm's 1,500 E-mail users have been using Banyan mail since 1988.

"Beyond has a spell checker, which users have been asking for for years, and it's easier to attach documents to messages using Beyond. Vines does it, but it is a bit kludgy," Lewis said.

While those features, which are available in some other packages, are helpful, the deciding factor in Equitable's purchase of BeyondMail was BeyondMail's tight integration with Vines' transport technology and its ability to use the Banyan StreetTalk directory, according to Lewis.

"Because Beyond is fully integrated with StreetTalk, we don't have to build a separate [E-mail] directory," Lewis said.

Both CC:Mail and Microsoft Mail provide their own transport systems and require separate administration of user names.

NEC Technologies, Inc. in Boxboro, Mass., is starting to move 500 of its more advanced 1,800 E-mail users to BeyondMail, according to technical support manager Tim Baranowsky.

**BeyondMail**, *page 68*

**BeyondMail** has a 10th-place market share based on estimated number of electronic mailboxes, the Electronic Mail and Micro Association said. But that "is somewhat deceptive because their flagship product has only been shipping for about six months or so," said David Whitten, a program director at Gartner Group, Inc.

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IBM

# X servers on the rise

By Lynda Radosevich

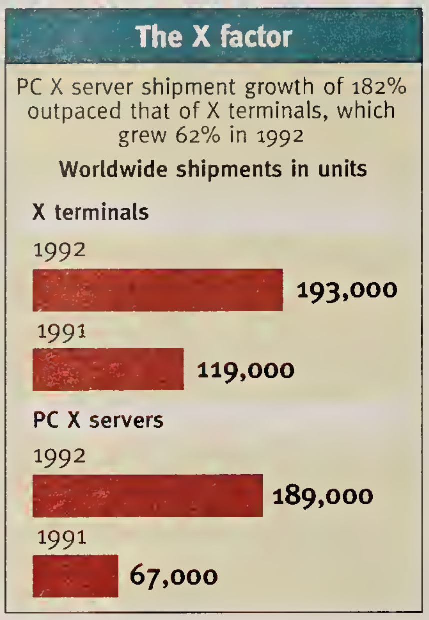
Unit shipments of terminals with built-in X Window System server capability grew by 62%, while shipments of X-enabled PCs grew by a whopping 182% during the last year, according to two recently completed studies.

Introduced in 1989, X technology runs under Unix and other major operating systems and lets users run applications on other computers in the network and view the output on their own screen.

"Anything so new is going to grow, but this growth is considerable," said International Data Corp. (IDC) analyst Eileen O'Brien. X technology is run by a consortium of vendors and is gaining popularity rapidly, she said, because "it runs on anybody's anything."

According to the separate reports from IDC and The X Business Group, Network Computing Devices led the X terminal market, with a 28.4% share of the 193,000 units shipped in 1992.

Hewlett-Packard Co. led in revenue growth with a 22.1% share of the $564 million market, according to IDC.



Source: International Data Corp.

The PC X server market grew to 189,000, led by Canada-based Hummingbird Communications Ltd., and it has "a good chance of overtaking the terminal market by 1993," O'Brien said. This is because PC X servers can run PC applications as well as X applications, she said.

At Heidtman Steel Products, Inc. in Toledo, Ohio, an X system is helping the company deploy a quality tracking system that is too large and complex for a local-area network, according to director of information systems Jim Hill.

Using HP minicomputers and X terminal servers with touch-screen operations on the plant floors, the steel service center is replacing a cumbersome paper tracking system with X because "it's a highly integrated system," Hill said.

# 3Com ships new family of terminal servers

By Lynda Radosevich
SANTA CLARA, CALIF.

In a market that the most optimistic predictions say will be flat, 3Com Corp. is shipping a new family of terminal servers that can support four protocols and connect up to 48 terminals in one box.

Aimed at companies with large mainframe and minicomputer investments, the terminal servers can be used to link serial terminals to local-area networks, giving the terminals access to resources such as network servers and printers. Also, the servers let information systems managers connect terminals to a host computer using one network cable from the server.

"One reason the market is not growing is downsizing," said Chip Pettirossi, an analyst at International Data Corp. in Framingham, Mass. "Companies are replacing terminals with PC LANs, and applications that traditionally ran on mainframes are moving down to LAN environments."

### A good investment

Despite this trend, companies with many desktop terminals are using terminal servers to help preserve their investment, he said.

In its new lines of terminal servers, the CS/3000 and CS/3100, 3Com increased the standard number of ports from 16 to 48. Accompanying software supports four protocols: Transmission Control Protocol/Internet Protocol (TCP/IP), Digital Equipment Corp.'s Local-Area Transport, International Standards Organization's Open Systems Interconnect (OSI) and IBM's TN3270 terminal emulation protocol.

For Texas Children's Hospital in Houston, the additional ports and multiprotocol support fall right into its networking plans.

The hospital uses 3Com terminal servers to allow dumb terminals on nursing station desks, for example, to communicate with the Ethernet LAN— using the network resources such as the modem pool service — and to get information from databases on the mainframe, according to David Schiller, director of network service and technical support. Schiller said he chose 3Com's terminal server because of its support for TCP/IP's Simple Mail Transport Protocol, which he uses as the transport protocol for his network management system.

"Hospitals are very concerned with space, as most of it is slated for inpatient care," Schiller said. "When we have a need to connect 3,000 users to the network backbone, it's nice to have a slim design."

The diskless CS/3000 in a 48-port configuration is priced at $6,500. The CS/3100 with internal drive is priced at $6,900. 3Com's terminal server software is priced at $800 for a site license, including TCP/IP, TN3270 and OSI support.

# BeyondMail

CONTINUED FROM PAGE 65

"There will never be a total phaseout" of Banyan Mail, Baranowsky said, "but BeyondMail offers some extras."

For example, NEC plans to use Beyond's rules-based technology to build form-routing applications to guide the processing of purchase orders, facilities requests, maintenance orders and "anything that starts with a form, requires a signature and goes from one person to another," he said.

### Late with Windows

While Beyond is making inroads into some corporate markets, it still has a "very small share of the LAN-based market," in part because the company didn't come out with a Microsoft Windows-based product until last June, said David Whitten, program director at Gartner Group, Inc., a market research company in Stamford, Conn. However, "as electronic-mail users become more sophisticated, some of BeyondMail's added capabilities — such as its rules-based technology — will show their value" in the market.

That fits right into the company's plans, said Chuck Digate, Beyond's president. He said the company's primary focus is large accounts such as Fortune 2,000 companies and the government. To appeal to these larger customers, Beyond is working on joint marketing agreements with Novell, Inc. and Banyan "in the workgroup arena," Digate said.

## Reporter's Notebook

AT&T "shot itself in the foot" when it indicated during its Asynchronous Transfer Mode (ATM) service announcement that it does not intend to offer SMDS, according to one analyst who attended the event. The reason: AT&T Network Systems is still saddled with the task of selling its BNS-2000, an SMDS-capable switch that AT&T carrier services elected not to use for its fast-packet services. "This has a bad effect" on AT&T Network Systems, not to mention that it could possibly stunt users' SMDS deployment when the industry discovers that the SMDS capability, largely being sold today to regional telephone companies, will not be offered in the long-distance arena by the market leader.

COMNET

A comment from Jon Fjeld, who oversees development of **IBM**'s 6611 multiprotocol router: "We don't anticipate taking over Cisco this year, but we do expect to catch up to the other router vendors in terms of shipments."

Router giant **Cisco Systems** estimated that 30% of its new accounts each month are pure IBM SNA shops — an odd statistic, given that routers' strengths lie first and foremost in interconnecting LANs.

A representative from **Microsoft,** which supports some 28,000 workstations in-house, was overheard estimating that just 5% of its corporate desktops would be on ATM LANs by 1997. Of course, Microsoft recently became a pioneer in widescale deployment of 100M bit/sec. FDDI over copper wiring, which should stall the company's need for ATM bandwidth for a while.

Networking industry pundit John McQuillan was full of analogies at a breakfast sponsored by **Netrix**. "Your network is like a car; it loses about 20% of its value every year. You have to make a choice when it quits becoming cost-effective to maintain it" or replace it, he said. He also encouraged public choices for ATM networking, likening ATM to a "jet engine for your network. You can go faster and carry more stuff. But jets haven't obsoleted all propellors. And most of us don't own our own jets; we rent time on 747s."

Ninety percent of leased lines run less than 1,500 miles, and 1,500-mile distances are where frame relay becomes more economical, according to Paul Weichselbaum, **MCI**'s vice president of data marketing.

# Routers make progress

CONTINUED FROM PAGE 65

is a problem when data is traversing several LANs.

The local acknowledgment scheme means that the internetworking device forwarding the data to the next LAN provides the source with the receipt.

Retailer Carter Hawley Hale will reportedly use the LWX version to consolidate its front-end processor traffic across 89 locations and 31 applications.

Market leader **Cisco Systems, Inc.** said it shipped the first two production units of its recently announced Cisco 7000 high-end router [CW, Jan. 18] to Unitel Communications, Inc., a carrier based in Toronto.

Cisco also said its products have passed Government Open Systems Interconnect Profile (GOSIP) Version 2 testing.

GOSIP compliance is required of federal agencies in new procurements, and Cisco estimated that government users account for 15% to 17% of its customer base.

**New Products**

# Cubix offers auto reboot feature

Cubix Corp. has announced the PA3030 Processor Alert System, which can automatically reset Cubix's BC Series CPU cards in the event of a software crash.

Cubix's BC Series is a "computer on a card" that is typically rack-mounted and used for remote communications, application servers, gateways, batch processing and other network functions. The cards can be connected by wire to the Cubix PA3030, which monitors their status; if a card does not respond, the PA3030's watchdog timer will automatically initiate a hardware reset to that unit.

Automatic rebooting can be useful in remote communications. If a user dials in and does something that "hangs" the host, he must often wait until a local administrator can be called to reset the PC. The PA3030 will allow a user to hang up, call back and start working again.

The PA3030 is now available for $995 from authorized Cubix dealers.

*➤ Cubix*
*2800 Lockheed Way*
*Carson City, Nev. 89706*
*(702) 883-7611*

## X Window System

Digital Equipment Corp. has enhanced its VXT 2000 multiwindow terminal family with new software productivity features for network resources access. The VXT 2000 17-in., monochrome, single-box, multiview terminal includes DECnet protocol support, Simple Network Management Protocol support and PC-style keyboard support for DEC's LK443 and LK444 PC keyboards.

Product benefits include low emissions standards compliance, resolution of 1,280 by 1,024 pixels, 100 dot/in. display and 4M-byte memory standard, expandable to 16M bytes in 2/4M-byte, industry-standard single in-line memory module increments.

The product costs $2,095.

*➤ DEC*
*146 Main St.*
*Maynard, Mass. 01754*
*(508) 493-5111*

Cayman Systems, Inc. has updated XGator. Release 2.0 changes an Apple Computer, Inc. Macintosh into an X Window System client for standard X server users.

Faster than Version 1.1.1 by 20%, Release 2.0 has added a number of diagnostic and functionality improvements, including color support for black-and-white and color Macintosh monitors, remote restart and the ability to launch an application when an X user establishes a connection to the Macintosh.

A single-user license costs $295; a 10-user license costs $2,495.

*➤ Cayman Systems*
*26 Landsdowne St.*
*University Park at MIT*
*Cambridge, Mass. 02139*
*(617) 494-1999*

## Wide-area networking hardware

AT&T Paradyne has introduced the V.32terbo, a modem enhancement.

According to the company, the product offers 19.2K bit/sec. speed, a 25% data transmission speed increase over the present highest modem standard of 14.4K bit/sec.

The V.32terbo will be incorporated into the company's Comsphere 3800 modems as a regular feature.

A standard pack costs $795.

*➤ AT&T Paradyne*
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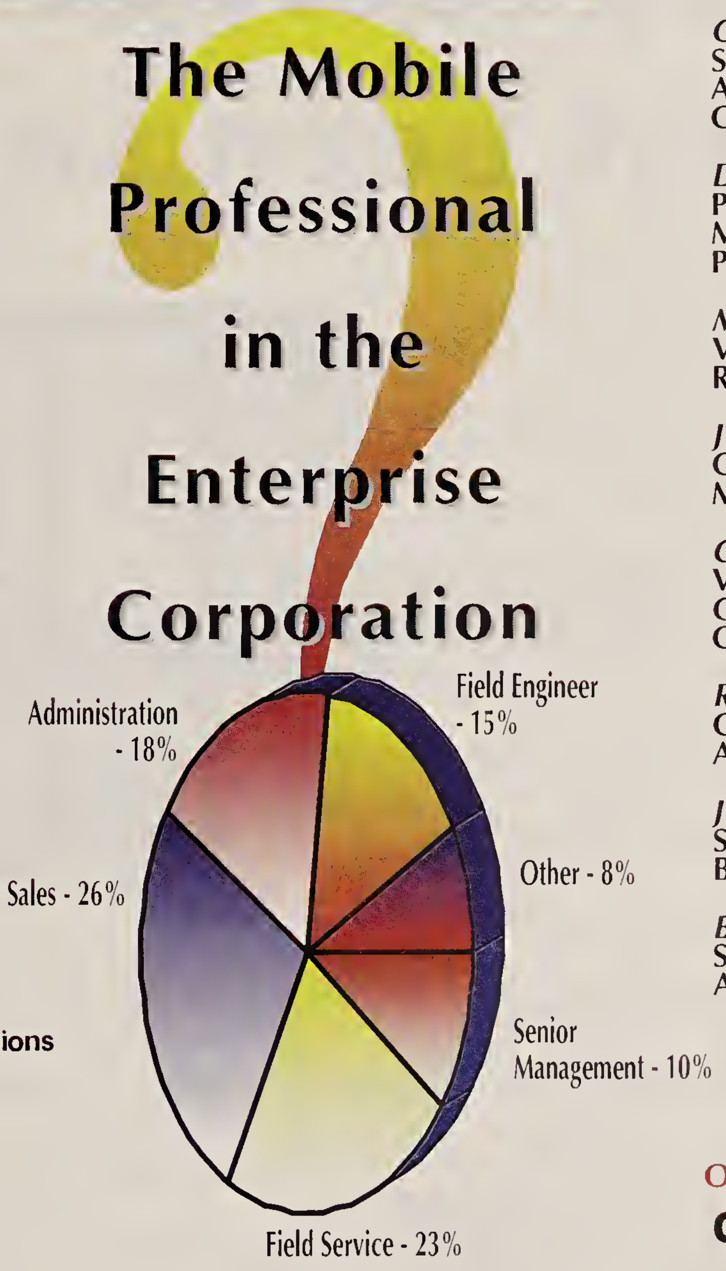

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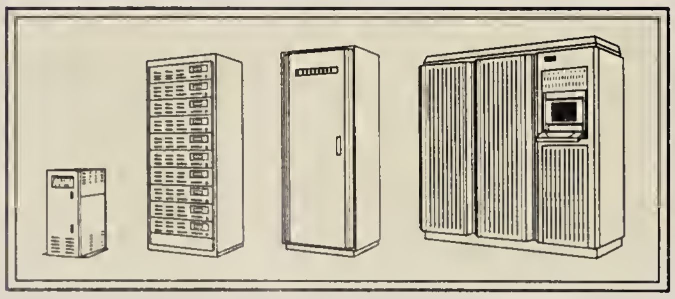

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# Large Systems

PYRAMID BUILDS ICL PARTNERSHIPS, 73
NEW PRODUCTS, 73

# NT for the midrange: Mixed thoughts

## Enthusiasm among multiuser computer vendors ranges from hot to wait-and-see

By Melinda-Carol Ballou and Mark Halper

While many PC companies have indicated their intention to support Microsoft Corp.'s Windows NT and a number of vendors of departmental and enterprise systems have also done so, others are treading with more caution, in part because of their commitment to using Unix to help users downsize.

Vocal NT supporters include Digital Equipment Corp., Sequent Computer Systems, Inc., NCR Corp. and Intergraph Corp. NT hardware boosters applaud the operating system for its multitasking and support for symmetrical multiprocessing, ease of use and relatively seamless integration qualities with Windows and DOS desktop applications.

Hewlett-Packard Co. is moving more carefully, along with Pyramid Technology Corp. in San Jose, Calif. Rich Sevcik, general manager of HP's systems and server group, noted, "NT as a viable server in comparison with Unix is going to be several years away." HP has an NT development team in Fort Collins, Colo., where activity is focused primarily on desktop use.

NT's initial impact will be as a desktop system this year, and it will catch on as a file server in the second half of 1994, Sevcik said. As a commercial business server, he said, NT will not take hold until 1996.

Even ardent NT enthusiasts agree that no new operating system, NT or otherwise, will work its way into the mainstream overnight.

**Improvements necessary**

To reach that level, Microsoft must hone the operating system to overcome both real and perceived shortcomings in areas including database support, terminal support, on-line backup and networking, according to HP and Pyramid officials. They said they are fighting a long-term battle to gain acceptance for their Unix wares as secure, reliable equipment and that they expect corporate users to scrutinize NT's make-up just as closely.

### Around the corner

DEC will soon ship a range of Intel-based and Alpha AXP-based NT platforms from the desktop to high-end servers and is likely to someday promote NT as the company's strategic operating system, according to industry analysts.

Sequent last month said it will offer a line of Intel-based NT servers.

Intergraph will offer NT as an alternative to Unix as an operating system for its new workstations.

NCR showcased an eight-CPU, 486-based server last spring and is shipping some of its servers with beta-test copies of NT for users who want to check out the systems, company officials said.

Industry analysts agreed. "NT is not going to capture the high-end server market quickly," said Michael Goulde, a senior analyst at Patricia Seybold's Office Computing Group, a consulting firm in Boston. "Once you get out of the interactive environment or strictly client/server, you run into a whole different set of requirements such as availability, clustering, job scheduling [and] systems management, and NT is a long way from proving itself capable in those areas."

> "NT is not going to capture the high-end server market quickly."
>
> *—Michael Goulde*
>
> *Patricia Seybold Group*

Even Microsoft said it does not expect instantaneous enterprise success. Early enterprise-wide uses are likely to include decision support and financial programs, according to Dwayne Walker, director of Windows NT and networking products at Microsoft. These are the same functions, he noted, that corporate users are more likely to move from mainframes onto Unix platforms.

Sequent Chief Executive Officer Casey Powell predicted that early sales of his company's WinServer series of NT machines will go to workgroup and smaller departmental environments.

DEC will target NT as one of three operating systems running on the company's new Alpha AXP reduced instruction set computing processors, as well as on Intel Corp. microprocessor-based systems.

While DEC intends to run NT on a wide range of machines, from "the desktop to the data center," the first to ship will be an Alpha PC, perhaps as soon as this month, with a beta-test version of NT and Microsoft's Software Developer's Kit, according to DEC sources.

Microsoft has developed a Hardware Abstraction Library layer that isolates NT from hardware dependencies and makes it fairly straightforward for a range of systems vendors to support and run multiple processors on, Goulde said.

But as an enterprisewide operating system, NT has some deficiencies, such as weak backup capabilities and nonexistent support for terminals, according to Sevcik.

Walker noted that DEC and other third parties are developing their own products to tie NT into terminals. While basic backup capabilities will be offered with NT, more complex backup features will be offered by third parties.

Walker addressed another common concern expressed by hardware vendors and users — that NT is short on networking protocols. He said NT will offer Transmission Control Protocol/Internet Protocol (TCP/IP), including a range of TCP/IP such as File Transfer Protocol, Telnet, Microsoft's NetBEUI LAN Protocol and remote procedure calls.

Some sources have said that Microsoft may first issue a client-only version of NT, which would be short of networking features. Microsoft has denied those assertions [CW, Jan. 25].

NetWare client support for NT has been offered by Novell, Inc. in a prerelease version on CompuServe, and Microsoft will offer IBM's Systems Network Architecture support as a layered product for NT, according to David Solomon, president of Solomon Software Technologies, a consulting firm in Nashua, N.H.

Network File System support will be made available by SunSelect, the software division of Sun Microsystems, Inc., Solomon added.

Several hardware companies, such as Sequent and DEC, are working hand in glove with database vendors to tailor NT database offerings to their multiuser platforms.

One of the vendors least enthusiastic about NT is Pyramid. "We have plans to run NT, but I don't see it as that strategic to us at this point," said John Chen, executive vice president at Pyramid. "Any new operating system on the server side will have to establish its reliability."

**On its way**

There are not many versions of Unix that support symmetrical multiprocessing (SMP), and NT will support up to 16 processors with classic SMP support and no master/slave relationships. NT is well on its way to building the momentum it needs to ultimately capture significant shares of both the desktop and the server markets, according to David Solomon, president of Solomon Software Technologies, a consulting firm in Nashua, N.H.

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**Commentary**

Jean S. Bozman

# Hands are full

Who can blame Oracle for wanting to become a $2 billion firm by 1996? Oracle wants to grow its $1.18 billion database business through re-engineering partnerships with some of its largest customers — the Boeings, AT&Ts and Kelloggs of the world.

It was Oracle's largest accounts that kept on placing orders right through Oracle's financial troubles in the early 1990s. So it is natural that Oracle would once again turn to sites such as McDonald's and Nippon Telegraph and Telephone for future revenue. But user sites must hope Oracle can merge its responsibilities to provide both products and services.

That's because the vendor is in the middle of a complex rollout of products, starting with the shipment of its Oracle 7 relational database last month and continuing into June with a new graphical tool set and communications software that will make distributed client/server applications possible [CW, Feb. 1].

Raymond J. Lane, Oracle USA president and leader of Oracle's services strategy, says he believes the time is right to capitalize on IS' shift to client/server technology and open systems — two of Oracle's best calling cards. "Information technology [departments] no longer have the luxury of asking for large budgets, and they must deliver results in one year instead of three," Lane told analysts recently. "We want long-term relationships that will deliver us into project after project after project."

**One-stop shopping**

Oracle's new strategy extends its traditional role of product vendor. It wants to be a one-stop shopping project manager, selling its own products and consulting services and asking systems integrators such as Perot Systems to help out. The strategy was also designed to boost sales of Oracle's $49 million applications business by selling preprogrammed templates to some industries, such as the pharmaceutical and oil industries.

Bozman, *page 72*

# NCR users cry foul over I series glitch

by Thomas Hoffman

A war of words over an alleged glitch in the ITX operating system used to run NCR Corp.'s proprietary I series machines continues to drag on.

Several disgruntled NCR users claim the operating system software has caused a phenomenon called "silent death" to occur where, for no apparent reason, the system comes to a halt, causing data corruption and file loss.

Several users who experienced problems in the late 1980s have since settled their legal cases with NCR. However, sources said at least four user companies still using the I series systems say they are experiencing problems and preparing legal action against NCR. They are Tractor Trailer Supply Co. in St. Louis, Felmor Corp. in Baltimore, Saxton, Inc. in Phoenix and Hopper Specialty Co. in Albuquerque, N.M.

Meanwhile, NCR contends that only a handful of its remaining 5,000-plus I series customers have experienced these problems, which NCR officials said are tied to an applications program originally provided by Taylor Management Systems, Inc. in Amarillo, Texas, but no longer offered to I series users.

However, some former I series users said the problems appeared even when they did not have the Taylor package on their machines. For example, Scott Petroleum Corp. in Ittabena, Miss., a fuel oil wholesaler, installed an NCR 9500 minicomputer running the ITX operating system in 1988. According to Richard Fulgham, Scott Petroleum's data processing manager, the company suffered "silent death" when the system ran Taylor's Distribution Management System.

### Problem remains

Thinking the "silent death" resulted from an incompatibility between the Taylor package and the NCR hardware, Scott Petroleum removed the application software from the ITX environment in 1990. However, even after the Taylor package was removed, Scott Petroleum continued to suffer from operational glitches.

"At first, I thought it was incompatibility between the Taylor software and the hardware," Fulgham said. "But after further research, we realized that the ITX operating system was at fault."

Because of a nondisclosure agreement, Fulgham said he could not discuss the out-of-court settlement Scott Petroleum reached with NCR in October 1992. Since then, his firm has replaced the NCR system with a Digital Equipment Corp. MicroVAX 3100 Model 90 machine, which Fulgham said has "worked great so far."

Because the NCR system would crash approximately every 30 minutes, Scott Petroleum lost files and had data corrupted on those files that remained, Fulgham said.

Scott Petroleum was not alone. An auto parts distributor in San Diego had used an NCR 9400 system to handle inventory control, accounts payable and receivable and customer records. A company executive, who requested anonymity because his firm also signed a settlement with NCR, used the system for a month, in late 1989, with catastrophic results.

"The system cost us $250,000 in out-of-pocket expenses in one month and just about buried our company," he said.

The auto parts executive also said the NCR 9400 system crashed every 30 minutes and lost customer records every time it went down. That system suffered from a phenomenon called "deadly embrace," which caused the system to crash whenever two or more on-line terminal users tried to access similar data.

"Customer satisfaction with our company dropped so low that we still haven't recovered," the executive said.

NCR has contended that the problems have been incurred by a small percentage of its 5,000-plus I series customers and were caused by the Taylor management package.

"The [Taylor] software was poorly written, and NCR was able to resolve that problem for many of its customers," said Norton Cutler, NCR's general counsel.

Noting the exception of problems experienced by Fulton Provision Co. in Portland, Ore., Cutler said NCR is not aware of any system problems experienced by non-Taylor users. Fulton is currently migrating to an NCR System 3000.

In an affidavit, Jerry Hood, data processing manager at Fulton, said the firm never used the Taylor system but that almost immediately after Fulton began using the ITX system in 1989, "we experienced terminal lockups when accessing our inventory files."

### Doors now closed

Taylor Management Systems went out of business in 1990, but its founders have two lawsuits pending against NCR. One is an arbitration matter between Taylor and NCR that was held in Dayton, Ohio, last month. Both sides are preparing briefs and the arbitrator will make a decision in 60 to 90 days.

Taylor claims that defects in the NCR hardware and software caused the terminal lockups, silent death and deadly embrace, and subsequently forced Taylor out of business.

Taylor's founders claim their software ran smoothly on Burroughs Corp. hardware but not on the NCR equipment. Taylor also contends that NCR was aware these problems existed but did not alert Taylor to the situation.

Taylor has a similar action pending in Dallas. Executives at Taylor could not be reached.

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# Bozman

CONTINUED FROM PAGE 71

That could jump-start new applications development by providing up to 40% of the base code, Oracle executives said.

It's a good plan for Oracle's next growth phase, although industry analysts who attended a recent Oracle briefing in San Francisco noted a few pitfalls.

First, large companies will get more handholding and attention from Oracle's direct sales force than medium-size Oracle sites. That is a matter of economics, says Charles Phillips, vice president of research at SoundView Financial/Gartner Group, Inc. in Stamford, Conn. High-end customers often spend millions of dollars for their Oracle databases. "The bottom line is, if you want the handholding, you've got to pay for it," Phillips says.

In boosting the use of third-party distribution for its software, Oracle is following a broader industry trend. "Relying on alternate channels at the low end of the business is the only profitable way to distribute the products," Phillips says, adding that Oracle's free consulting may also go by the wayside. "They don't want to be the application development arm of the customer; they want to pull the technology pieces together."

Second, though one-stop shopping appeals to large users, it may also blur the line between Oracle and systems integrators. "Customers want one firm to come in and fix everything, just like IBM did," explains Gary Dvorchak, an analyst at Hambrecht & Quist, a San Francisco investment firm. Even so, Oracle must be careful not to offend potential partners such as systems integrators, which manage their own global accounts.

Third, the new "service" message could overshadow Oracle's role as a products vendor. Longtime customers, whose support built Oracle's business from $55 million in the mid-1980s to more than $1 billion today, are hoping Oracle will keep timely delivery of products a top priority. Without the new graphical tools and communications software, users may delay plans to build distributed client/server applications with the Oracle 7 relational database.

To avoid these pitfalls, Oracle executives are trying to stay in sync with their user base. Lane, a former Booz Allen & Hamilton consulting executive, recently set up a Client Advisory Board with CIOs from 15 of Oracle's largest user companies. The board includes Carl Dill, McDonald's Corp. information services vice president, and Texaco's information technology department general manager, James Metzger, Lane said.

Can Oracle truly change its stripes from product vendor to product and service provider? Users at thousands of IS shops around the world hope the answer is yes. They should know how well Oracle is balancing its twin duties to deliver products and services by the time they attend the International Oracle Users Group meeting in Orlando, Fla., this fall.

Bozman is *Computerworld*'s senior West Coast editor.

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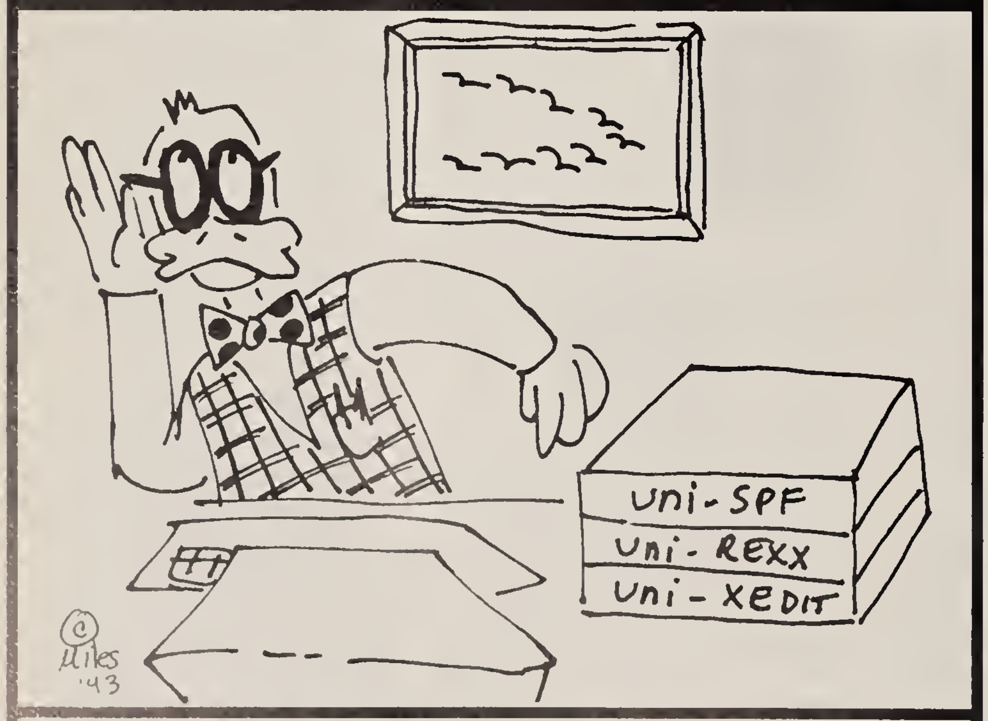

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# Pyramid builds partnerships with ICL units

By Mark Halper

SAN JOSE, CALIF.

Pyramid Technology Corp. recently expanded its efforts to draw in new strategic partners through deals with units of Fujitsu Ltd., giving businesses such as Fujitsu's ICL PLC in the UK rights to Pyramid's multiprocessor bus technology and calling for ICL to resell Pyramid machines.

Pyramid also signed a marketing partnership with Fujitsu/ICL Australia, under which Fujitsu/ICL will offer Pyramid servers and will provide integration services in Australia.

The agreements are the latest in a series of partnerships for Pyramid, which expects to sign other accords through the efforts of a newly formed strategic alliance unit, according to John Chen, Pyramid's executive vice president.

Last fall, Pyramid entered alliances with Comdisco, Inc. and Integris Co., tapping them for technology for Pyramid's MISserver ES series of servers.

ICL's Peter Stuart, vice president of business development for midrange systems, said London-based ICL will offer Pyramid-brand boxes until the British company — which is 80% owned by Japan's Fujitsu — implements the design sometime in 1994.

The reselling arrangement means ICL, which bases its present Unix line on Sun Microsystems, Inc. Scalable Processor Architecture (SPARC) technology, will add rival Silicon Graphics, Inc.'s Mips technology to its product mix because the Pyramid machines are built around Mips microprocessors. However, the ICL machines incorporating the Pyramid bus will use SPARC chips, Stuart said.

The interim reselling plans present ICL with the chance to immediately provide higher end Unix systems than it can offer with its SPARC line. Pyramid's machines scale up to 24 processors. Stuart said ICL "needs to get up to about eight processors" for certain customers.

Although Pyramid is focusing its marketing efforts on selling its multiprocessor machines into data centers to offload mainframes, Stuart said ICL is focusing its Unix efforts on "a new class of applications in the midrange," such as customer services and sales management.

ICL, which had roughly $4 billion in sales in 1992, garnered its revenue in equal proportions from proprietary mainframe, Unix and PC sales. Meanwhile, the deal with Fujitsu/ICL Australia adds Unix boxes to complement Fujitsu/ICL's mainframe offerings.

## New Product

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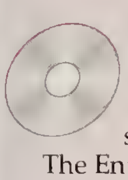

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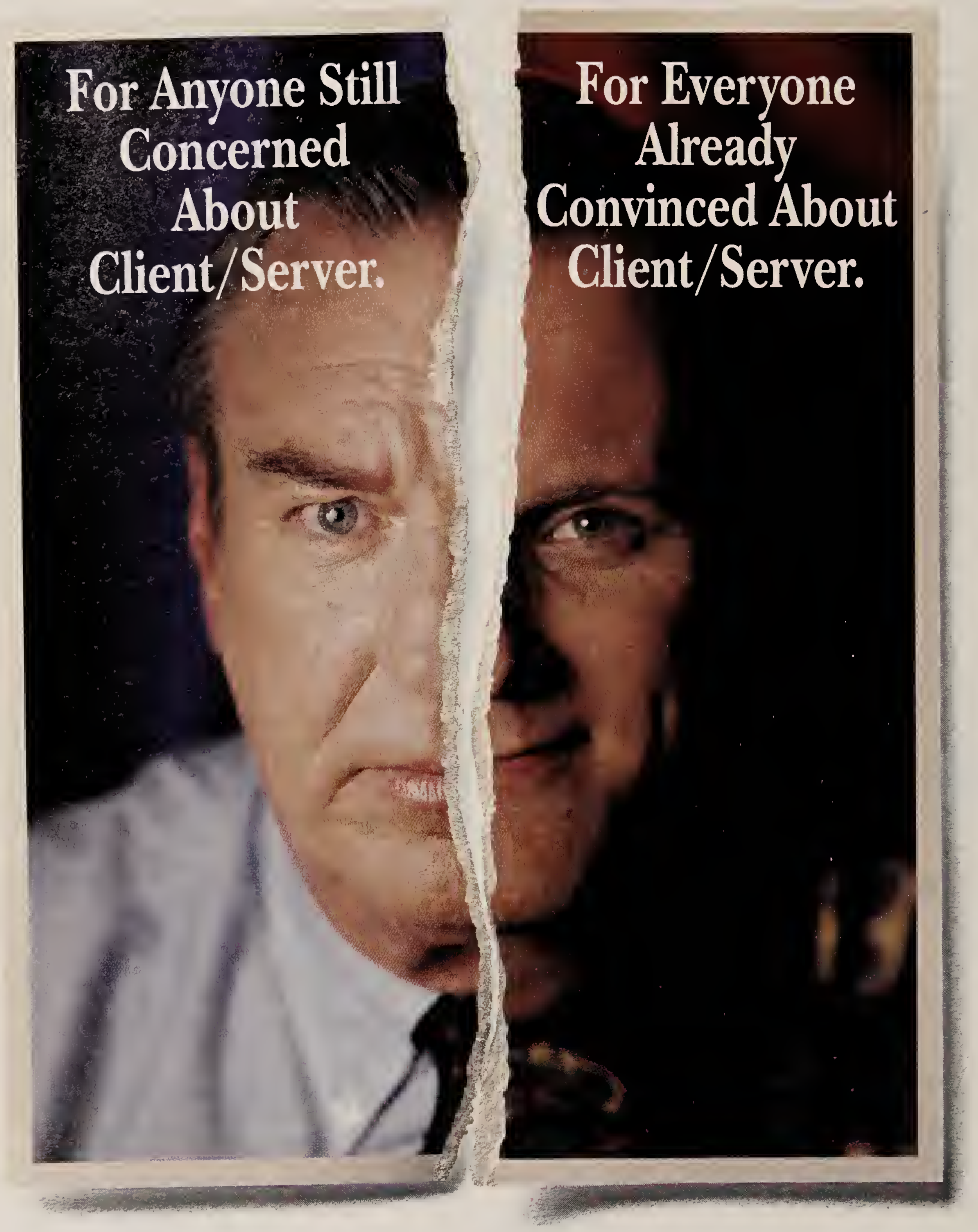
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Object-oriented programming

# Borland's PAL shift proves manageable

By Jean S. Bozman

**Early users of Borland International, Inc.'s Paradox for Windows said the transition from the DOS-based Paradox procedural language to Paradox for Windows' ObjectPAL language requires a change in programming style. But the jump to object-oriented programming is a hurdle that can be overcome in a few weeks, some users said.**

ObjectPAL is the object-oriented application development language in Paradox for Windows, which was formally introduced last week after a six-month delay [CW, Feb. 1]. It is a superset of the C++ object-oriented language, Borland said. Its "object inspectors," "aliases" and "clip objects" can be deployed through point-and-click methods, rather than by writing lines of sequential code.

But what some early users called the "fun" of object-oriented programming did not kick in until old programming habits were adjusted. "We programmers typically have a mind-set that we're going to write a program from beginning to end," explained Mike Peters, an MIS manager at TRW Corp.'s Space & Electronics Group in Redondo Beach, Calif.

"Now, we have a visual way to program by attaching objects to other objects," said Peters, who has been using a beta-test version of Paradox for Windows for eight months. He said some TRW programmers learned to use it in a week.

**Some PAL programmers are angry that they are expected to move to a new Paradox language.**

### Some holdouts

Others may have more difficulty doing so, according to industry analysts.

"There is a hurdle as you shift into a new paradigm," said Donald DePalma, an analyst at Forrester Research, Inc. in Cambridge, Mass., who suggested that it could pose a fairly substantial leap for some. "In any programmer base, you'll find some people who just can't move."

However, users can decide to have both kinds of applications. Paradox 4.0 and Paradox for Windows databases can coexist on a network, along with dBase databases, Borland Chief Executive Officer Philippe Kahn said.

Users can "join" data from Paradox 4.0 and dBase databases with data stored in Paradox for Windows. Paradox 4.0 applications can also be viewed in a Paradox for Windows pop-up window, Borland said.

One style of ObjectPAL programming is designing user screens by dragging and dropping icons for colors and shapes from Paradox work palettes. "You can get into the underlying [ObjectPAL] code if you want to, or you can stay on top of it," said Ted Miglautsch, vice president at Miglautsch Marketing, Inc. in Milwaukee, a beta-test site since December. He plans to use Paradox for Windows for icon-based applications that will retrieve data from a 1G-byte Borland InterBase database server.

Users said ObjectPAL provides speedy development, ease of use and pretested objects that can be used over again.

But users also noted a few missing pieces in Paradox for Windows: Borland SQL Link programs to tie applications with remote database servers; a runtime version for use with finished Paradox applications; and support for 32-bit operating systems.

These features will be in future releases, said David Watkins, Borland's vice president of product marketing.

### Teaching new tricks

Some longtime PAL programmers are mad that they are expected to move to a new Paradox programming language.

"If it's not upward-compatible, I'm a little bit angry," said one longtime Paradox developer at a West Coast aerospace firm.

"What do they expect you to do? Throw out all your work? I've got 20,000 lines of code in a Paradox PAL application, and there's no way I'm going to jump on the Paradox for Windows bandwagon for my current project."

**ObjectPAL glossary:**

**Object inspector:** The object inspector's pop-up window shows a list of characteristics, methods or attached code for any object selected by the click of a user's mouse.

**Alias:** A name that can be invoked to save time. An alias can be used to quickly establish connectivity between a Paradox for Windows application and a remote relational database.

**Clip objects:** Users can cut and paste objects, moving them around an application's user screens, for example, or between windows. Users select colors or screen widgets from a work palette.

# Utility powers up with client/server

## Florida Power uses Andersen Consulting tool for development project

ON SITE

**Florida Power**
*St. Petersburg, Fla.*

**Challenge:** To create a client/server-based customer service application for Windows NT PCs and servers.

**Technology:** Andersen's Foundation for Cooperative Processing Version 1.2, IBM OS/2 developer workstations.

**Goals:** Provide subsecond response time for client inquiries, reduce field service staff and data redundancy.

By Kim S. Nash
ST. PETERSBURG, FLA.

Florida Power Corp. is smack dab in the middle of a three-year, $48 million overhaul of a mission-critical customer service application. And you guessed it: The utility is going client/server. That is, if the development staff does not go nuts before then.

Florida Power, not to be confused with Miami-based Florida Power and Light, serves 1.2 million electricity users in the central and northern regions of the state. However, the company said it can serve Floridians better by transforming a 20-year-old, mainframe-based customer service system into a more efficient client/server application geared for Windows NT from Microsoft Corp.

The system, which handles tasks such as customer billing and troubleshooting power failures during Florida's hurricane months, "is really the cornerstone of how we do business," said Mitch Hull, manager of information systems.

The company plans to move 60% or more of its business processing off an IBM mainframe by enabling PC users to hunt down data on the mainframe and collect and work with it on the desktop.

So important is this scheme that Hull's future, to a certain extent, rides on its success. "Where I go from here depends on where this [project] goes," he said.

The linchpin of the undertaking is Andersen Consulting's recently announced Windows version of Foundation for Cooperative Processing (FCP), a computer-aided software engineering (CASE) workbench.

### Building blocks

With analysis and design completed, the customer service application is now in the construction phase, with more than 680 windows painted to date by Hull and a 90-member crew. They have also constructed about 50 dialogs, which are macros that automatically provide options and solutions to the most common customer calls received by Florida Power's service desk.

But do not think the going has been glitch-free. At $48 million, the switch is not cheap. Plus, network security is an unresolved issue. FCP provides a certain level of security, as will Windows NT if Microsoft comes through on its promises. "But we don't want our users having to log on to five different nodes or four different systems levels to get their work done," Hull said. "We've still got that floating over our heads."

Andersen claimed that FCP 1.2 is better suited to client/server development than previous versions because of the following enhancements:

- Improved communication between CICS mainframes and OS/2 or Windows clients.
- Stronger security features that developers can include in FCP-built programs.
- Better application programming interfaces for moving between OS/2 and Windows.

These "powerful" additions, which are invoked automatically, shield developers from tricky communications maneuvers required by systems that share data across servers and clients, said Don Dall, managing director of Andersen's Foundation unit.

Also important to Florida Power's plans is the fact that with FCP 1.2, developers do not have to target a specific operating system for the finished application right from the beginning. That means programmers can analyze, design and create prototypes of applications without regard for platform. Then, at construction, they click a box to choose the operating system: Windows, Windows NT or OS/2.

Few full life-cycle CASE tools offer similar flexibility, but some do, such as a recently an-

Utility, *page 77*

# Deere's faraway IS solution

By Mark Halper

MOLINE, ILL.

Deere & Co.'s approach to software development defies logic: To save time, it pushed its mainframe-linked development PCs halfway around the world to India.

For more than two years, the tractor manufacturer has contracted out a portion of its mainframe work to Satyam Computer Services Ltd. in Madras, India.

Using some 50 386 and 486 PCs in Madras, phone lines and a satellite link, Satyam ties into Deere's 3090 mainframes in Moline to convert programs from IMS database formats into DB2 with the aid of KnowledgeWare, Inc.'s Application Development Workbench computer-aided software engineering tools.

**Deere's decision to outsource software development to India was literally a case of the difference between night and day.**

And according to Satyam senior technical manager Ramesh Shastri, communications between the mainframe and the Madras PCs are much faster than they are between the mainframe and Deere's Moline-based development PCs, for reasons as simple as the difference between night and day.

Because Madras is 10½ hours ahead of Moline, Satyam's daytime development crew accesses Moline's mainframes in the dead of the night, when the computers are relatively untaxed and far more accessible than they are during business hours in Moline, said Shastri, who is based in Philadelphia.

Of course, Deere had other reasons for tapping Satyam because the time savings alone would probably not have merited its choice to move software development overseas.

As Shastri noted, the switch to Madras saves Deere money chiefly because labor costs are lower in India. He declined to elaborate but said that some four Satyam conversion projects since September 1990 have cost Deere about $800,000.

Satyam's maiden voyage with Deere was actually an on-site conversion in Moline of 33 of some 250 dealer-support programs. Deere wanted first to appraise Satyam's fundamental capabilities before embarking on an unproven satellite-linked transcontinental arrangement, Shastri said.

The four-month completion of the dealer system by a four-person Satyam team led to an ongoing series of off-site assignments. Even Satyam was uncertain about the satellite link.

"At first, we had some doubts about whether it would work," Shastri said.

It did work, and Satyam is currently in the midst of converting a program that tracks goods from Deere's suppliers and has completed conversion of a parts inventory program and a communications management program. It has also converted some of Deere's Cobol into different Cobol, Shastri said.

Satyam is also discussing client/server development possibilities with Deere, he said.

One of the key ingredients in the fast hook into the Moline mainframes is the high-speed data communications links that Satyam buys from India's national telephone carrier, Videsh Sancher Nigam Ltd. (VSNL), and from AT&T stateside. Both companies use 64K-bit links, Shastri said.

The Moline-to-Madras data route also includes a 486 PC in Madras that serves as the mainframe gateway for the 50-node Token Ring network of PCs running OS/2, calling down terminal emulation software from Moline.

A 486 bridge PC in Madras ties data from the gateway into the VSNL network, which is routed by microwave transmission to an earth station in Bombay for an uplink to an Intellsat satellite. From there, information is bounced to an earth station near London and routed via AT&T phone lines to Deere's Moline data center.

## Journey from Madras

*Developing and delivering code from India to John Deere in Moline, Ill., entails the following:*

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- 486 bridge PC.
- VSNL phone link to earth station.
- Intellsat satellite.
- London earth station.
- AT&T cable routing to Moline data center.

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# Utility powers up with client/server

CONTINUED FROM PAGE 75

nounced version of Pacbase from CGI Systems, Inc. in Pearl River, N.Y., and System Architect from Popkin Software and Systems, Inc. in New York.

Florida Power bagged the idea of simply rewriting the existing mainframe-based application because it was too much work with too little payback, according to Hull.

For example, he originally tried to get away with tacking graphical user interfaces (GUI) on existing mainframe programs using Easel Corp.'s GUIBuilder but soon abandoned that plan when he realized that the shells were pretty but dumb. "The Easel windows had no intelligence or processing power," Hull said. Mainframe programmers had to rewrite CICS transactions to coax legacy systems to work with Easel GUIs, he added.

**Client/server concerns:**

- Reprogramming programmers to work in teams and do more planning and analysis up front.
- Figuring out how to maintain decentralized, distributed applications.
- Formulating a plan for distributing software updates to remote servers and clients.
- Rewriting network strategies to send the least amount of data between server and client to keep network traffic down.

### Past history

Florida Power's relationship with Andersen goes back to 1991, when the utility's staff did not quite believe Andersen's client/server claims. So it put the vendor's feet to the fire with a rigorous test of FCP that yielded impressive results.

"We did a prototype of a large sales application in only two months with Cobol people who had never used the tool before, never mind programmed in C," Hull explained.

The company liked what it saw in beta tests of FCP 1.2 late last year.

Noting the relative lack of development tools for building distributed applications and the mixed success of IS pioneers, Hull likened client/server to "planning in the dark. But the light will go on eventually." For Florida Power, mid-1994 is the planned dawn, when the customer service program will be fully deployed to more than 1,000 Windows NT users.

**New Products**

## Cobol workbench aids downsizing

Migration away from the mainframe was again confirmed last week with the announcement of Intersolv, Inc.'s Intersolv Maintenance Workbench.

The set of maintenance and development tools, which run on OS/2 or local-area networks equipped with Microsoft Corp.'s Windows, allows Cobol applications running under IBM's MVS environments to be transferred to a local Maintenance database, according to company officials.

Tools in the Maintenance Workbench can then be used to search through the source-code database and make modifications. The tools also perform cross-referencing of source code and aid in program documentation.

Priced at $5,000 per seat, the Intersolv Maintenance Workbench supports Cobol 64, 74 and 85; Cobol II; IBM's VSAM, IMS DB and DB2 databases; and teleprocessing monitors such as CICS BMS and IMS MFS, company officials said.

➤ *Intersolv*
*3200 Tower Oaks Blvd.*
*Rockville, Md. 20852*
*(301) 230-3200*

## Utility offers access to SQL databases

Pioneer Software, Inc. announced a tool for connecting programs built with Microsoft Corp.'s Visual Basic to several SQL databases.

Q+E MultiLink/VB, due out next month, was designed to let Visual Basic programs use SQL to access data stored in 20 relational databases. Also, developers can design database tables with specific field names and data types and then link the tables to an application, according to a Pioneer spokesman.

With its database access, the $399 tool could help users create programs to run in client/server mode, the company said. Users do not have to learn interfaces for different databases because Q+E MultiLink/VB was designed to display all data in the same format.

The tool includes a feature that lets users edit, insert or delete database records from within the Visual Basic application.

Seven-year-old Pioneer makes other database access utilities, including Q+E Database Library for OS/2 and Q+E Database Editor for Windows.

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# Changing CHANNELS

*No longer can big corporations simply kick back and buy everything from the local sales rep. A look at the many new ways of acquiring technology in the 1990s.*

By Carol Hildebrand

For Bill Lodge, the way to stop tardy equipment purchases from crippling mission-critical applications was simple: "Eliminate the middleman."

Tired of delays in PC shipments and service, Lodge, project manager at Turner Corp., a New York-based construction company, dumped Compaq Computer Corp. in favor of direct response rival Dell Computer Corp. Compaq officials hope to win back such customers with a new direct response program to be unveiled by March 15, sources say (see story page 1).

The bottom line, says Lodge, who is responsible for maintaining Turner's client/server-based network covering 35 offices nationwide, was that the company simply could not afford downtime caused by dealer-related delays, so he switched to Dell. The Austin, Texas, firm was so eager to please, Lodge says, that they assigned him his own account representative.

"It's much more cost-effective to deal directly with the company," Lodge concludes.

### Decisions, decisions

Lodge's experience illustrates a quiet but potentially profound shift in the way large corporations acquire technology these days — especially the hottest products, including PCs, software, notebooks and local-area networks.

Information systems organizations and business units are increasingly exploring buying hardware, software and communications products from a widening range of channels in numbers that would have been unimaginable five years ago.

"Large companies are clearly expanding their channel use," says Brian Sharples, president of Intelliquest, Inc. in Austin, Texas.

MICHAEL ABRAMSON

**Aon's Wayne Sandusky:** *Solid knowledge of many channels a key IS job*

Until recently, buying a truckload of PCs, for example, was relatively easy: You called your dealer and, sooner or later, your order appeared.

But today, because of rapid growth in the number and types of channels, a purchaser can buy the same product from a reseller, computer superstore, consultant or systems integrator or can buy directly from the maker, among several other options. (For a listing of channels, see page 83.)

A recent survey by Intelliquest and International Data Group (IDG), the Boston-based parent of *Computerworld,* shows that some 35% of 947 corporate technology buyers polled were dissatisfied with traditional dealer channels.

The survey found that large companies are more likely to buy desktop devices and application software from two or three sources than from one. For some buyers, the appeal is cost; for others, good deals on specific brands or top-

Changing channels, *page 83*

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# Changing channels

CONTINUED FROM PAGE 81

notch service and support are big attractions.

"Software publishers are realizing the way they're going to get my attention is not to have software with one more feature but rather to make life easier for those of us that have to support the infrastructure," says Wayne Sadin, chief technology officer at a large Midwestern bank.

Sadin is moving away from buying software through a value-added reseller (VAR) and is instead negotiating agreements directly with manufacturers. He recently signed a master license agreement with Novell, Inc., for example. "We get the master disk from Novell, and we distribute from there," he says.

At Turner, Lodge has cut a similar deal with Microsoft Corp. that allows him to update his license count quarterly. Indeed, computer vendors trying to plump up margins and cultivate new markets have been eager to explore new ways of selling products.

**NEXT YEAR**

Though preferences differ somewhat by job title and organization size, many companies say they will significantly increase their nontraditional sales channels

**"DURING THE NEXT 12 MONTHS, DO YOU EXPECT YOUR USE OF THE FOLLOWING CHANNELS TO INCREASE, DECREASE OR STAY THE SAME?"**

| PERCENT CHANGE, BASED ON 947 TOTAL RESPONDENTS | |
|---|---|
| Computer superstores | +25% |
| Direct response | +21% |
| Software specialty stores | +12% |
| Value-added resellers | +11% |
| Direct sales | +6% |
| Traditional retail stores | +4% |
| Office supply/ Warehouse clubs | -2% |
| Consumer electronics/ Department stores | -4% |

PERCENTAGES HAVE BEEN ROUNDED

Source: Intelliquest, Inc./International Data Group

Earlier this month, for example, Microsoft announced a new series of programs that give corporate buyers 60% to 70% discounts on enterprisewide licenses [CW, Feb. 8]. Borland International, Inc., Lotus Development Corp. and WordPerfect Corp. have similar programs in place or on the way.

**Shift will continue**

"The largest corporations are making deals with vendors directly and bypassing the middleman," says David Coursey, editor of "PC Letter," an industry newsletter in San Mateo, Calif.

Analysts say mainframe and minicomputer sales are less dramatically impacted by changing channels than smaller platforms. But even so, IBM and others are drastically rethinking pricing, licensing and other sales issues.

And the shift toward new outlets seems likely to continue: The Intelliquest/IDG survey found that purchases by large, medium and small companies at computer superstores are expected to leap 25% this year. Direct response sales are expected to rise 21% (see chart above).

Observers and IS managers caution, however, that it is difficult to generalize about shifting channels. They note that early predictions about a massive shift away from direct sales, for example, have been overstated. Ultimately, which channel a corporation chooses is based on individual need, analysts say.

But no one argues that more companies are playing the field when it comes to getting the best deal on hardware, software and communications products.

**Single-source fear**

One inevitable result of the desire to buy technology through different channels is already evident: IS is having to expand and alter — perhaps profoundly — the role it plays in the purchasing process.

Many IS groups, fearing that clinging to the past could be disastrous, are already taking steps to modernize their purchasing process and approaches. Some organizations are educating themselves on new options, such as direct response and superstores in the hardware arena. Others are negotiating direct site licenses with software vendors, an increasingly popular choice.

"Go back 15 years ago and look at IBM," says Eric Singleton, IS director at the Orange County Appraiser's Office in Florida. "You don't want to get lazy and fall into a single point of contact because it's easy. It would be a tragedy if that situation re-evolved."

Like many of his colleagues, Singleton says he believes IS managers must be careful to avoid the trap of convenience. "It's a challenge," he says, "but that challenge is not up to the vendor; it's up to the client."

In the past, Singleton says, his group used to review products that had been preselected by a VAR. But today, he says, "we rely on ourselves to evaluate products a lot more than we used to."

To this end, the county has built a separate network entirely devoted to testing products that the staff is considering purchasing. The list of possible purchases has also been lengthened greatly, Singleton says, from about four products to as many as 50.

Wayne Sandusky, vice president and chief information officer at Aon Specialty Group, a Chicago holding company, agrees that IS can ill afford to stay myopic about a purchasing landscape.

"For an IS manager to do his job effectively, he has to focus a lot more external to the organization — on the vendors and

**Changing channels**, *page 84*

Channels defined

# A guide to choices

### Direct sales

A sales force that works directly through the manufacturer. IBM's famed Blue Suits are the best-known example. Direct sales can sometimes be disguised, as the sales rep will usually route orders through one of his traditional dealers.

### Traditional dealer

This channel, while not the oldest, is possibly the most mature, having undergone a consolidation in the past couple of years. It's where corporate America first bought its PCs, encompassing dealers such as InaCom Corp., Businessland, Inc. and Computerland Corp. These firms' main goal is straight volume sales, although lately there has been a movement to "add value" through service and support.

### Direct response

PCs are taken over the phone, backed by service and support (the quality of which, of course, varies from company to company). The best example is Dell Computer Corp., which has built itself into a first-tier vendor on the strength of its sales.

### Value-added resellers

Value-added resellers buy products from a manufacturer or distributor, add third-party hardware and/or software, then resell the entire package as customized, turnkey systems. For example, an add-in fax board and software would turn a PC into a fax system. RealTime Consultants and Laptop Computer Centre, Inc. are representative examples.

### The retail channel

This is a sometimes confusing, many-headed beast. Computer superstores, such as CompUSA, concentrate on technology products.

Office supply stores, such as Office Depot, sell computers along with the ink blotters and pencil sharpeners. Wholesale clubs, such as Price Club, offer rock-bottom prices, while mass merchandisers, such as Lechmere Sales, offer convenience along with a good price.

Quick. Think of a company with a much broader line of business UNIX computers than IBM.

## Changing channels

CONTINUED FROM PAGE 83

the retailers," he says.

Sandusky concedes that need is complicated by the natural IS tendency toward conservatism and minimizing risk. But he also admits that it's no longer feasible to keep "focusing inward and thinking that IS will take care of itself."

### End-user control sticky

Indeed, the proliferation of distribution channels raises a related — and much tougher — question for IS professionals: How do they manage technology acquisition by end-user departments to prevent technological chaos and further erosion of their power?

Unfortunately, according to IS managers, the growth of alternate channels seems to be further snarling this already tangled issue.

"There's always one whiz in a department who can find out that buying a Dell [PC] is cheap and a copy of LANtastic will give him a network," Lodge says.

Many companies, of course, already have corporatewide standards and lists of preferred products. But, Sandusky notes, "standards are only guidelines. We can't sit here at headquarters and tell everybody how to run their business."

### DESKTOP PCs

PERCENT OF RESPONDENTS USING CHANNEL (BASE: 378)

| | |
|---|---|
| Traditional retail stores | 29% |
| Direct response | 21% |
| Direct sales | 17% |
| Value-added resellers | 14% |
| Computer superstores | 10% |
| Office supply/ Warehouse clubs | 6% |
| Consumer electronics/ Department stores | 4% |

PERCENTAGES HAVE BEEN ROUNDED

**IS professionals** shared most of the same buying patterns as senior managers and departmental influences. The latter group was more likely to use direct sales and less likely to use computer superstores.

**Large organizations** prefer direct sales and are less likely to use direct response and office supply/warehouse clubs.

### BIGGEST BUYING FACTORS

1. VALUE
2. SERVICE
3. QUALITY BRANDS

Source: Intelliquest, Inc./International Data Group

This dilemma places many IS groups in the difficult role of having neither carrot nor stick to keep users in the corporate technology mainstream.

"The only way we can get [user departments] to adhere to standards is if we give them good support and they believe us," Lodge says. "We don't have a hammer. If they don't believe us, they don't adhere. They don't *have* to do it."

At Aon, Sandusky gets users to work through his department in a similar way: by positioning IS as a service and support department rather than "keeper of the assets." He says, "If you are a control-based organization, they will work around you. But if you do your job in terms of service and support, they will work through you."

But that kind of stance, Sadin notes, makes it even more important to always be on top of new products and outlets. "We keep up with technology and channel methods so when a user has a question, we can answer them immediately," he says.

Eric Daly, vice president of information services at Royal LePage Ltd., a large residential and commercial real estate firm in Toronto, has a little more bite to his bark: His group preloads all PCs purchased with the software the company uses, both custom and shrink-wrapped. Included in the setup is a security package that prevents users from adding their own software, thereby controlling outside purchases as well as the introduction of possible viruses and pirated software.

"They complain," he reports, "but that's the way it is. I'm a bugbear about paying for software. If you're not tough about that, it's amazing how many copies get floated around."

### Service: Big, big, big

Attractive as better pricing and convenience can be, many corporate buyers say service and support more often drive their choice of channels. And as the price umbrella once hoisted by IBM and Compaq snaps shut, delighted IS managers are finding themselves deluged not only by price bargains but also by good service and support options.

For example, Daly puts hardware out for competitive bid but still keeps an IBM representative on-site to handle service.

At Aon, Sandusky is considering calling in a dealer to help with PC support in his department. "There's no doubt that when it comes to high-end servers and the networking technology involved," he says, "you need specialized expertise to help you — not only from your retailer but from your manufacturer."

In contrast, Greg Chetel, director of systems planning at The Gillette Co. in Boston, finds traditional dealer channels most helpful at the low end, not the high.

Quick. Think of a company with better business UNIX price/ performance than IBM.

## How they sell

**Dell Computer Corp.** The nation's foremost direct response company sells PCs by phone and also offers a catalog of popular software. Plus, the low-end Dimension line is available in the electronic superstore circuit. For its largest accounts, Dell offers a corporate sales force, with service and support options ranging from telephone to 24-hour on-site support.

**Compaq Computer Corp.** Compaq has moved from its traditional dealer base into almost every distribution channel. Each of the firm's three desktop lines — high-end DeskPro/M, corporate standard DeskPro/I and low-end ProLinea — can be sold through every channel. But products tend to self-segment, company spokesman John Sweney said. So the higher end systems are seen in traditional dealers and VARs, while the ProLineas appear in the retail channels.

**IBM.** IBM has stratified its desktop offerings as it has given its PC company, IBM PC Co., independence. The unit carries the high-end Personal System/2 line, the mid-level ValuePoint and the PS/1. The latter is also available through channels aimed at small business and home buyers. IBM also has a direct response line. Service and support options differ according to the PC families.

**Digital Equipment Corp.** DEC offers its boxes through Desktop Direct, its direct response arm, as well as through the dealer channel, VARs and distributors, such as Merisel. At present, DEC does not use mass retail channels.

**Microsoft Corp.** The software top dog recently unveiled a licensing plan that lets companies license software in several ways, ranging from enterprisewide deals to license packs of 20 to 30 licenses. Discounts grow as the number of licenses increase (see story page 85).

**Borland International, Inc.** Borland also offers a volume license agreement, which it says offers better pricing as a user's cumulative purchases increase. Users can pay as they go — that is, a user can add licenses to his initial purchase as necessary.

**Lotus Development Corp.** License packs of less then 50 users or more than 50 users are available. Alternatively, buyers can negotiate the sales volume program, which lets them make software copies as needed in return for quarterly payments to Lotus. — *Carol Hildebrand*

"The value-add we try to get from dealers is more on the pre- and postsales hardware and software support — kind of office automation stuff," Chetel explains. "We're not really looking to them to support the networks or the real business applications." So while he might use a dealer to preconfigure and set up a PC, managing the LAN is another story.

### Direct response drawbacks

Chetel's not alone in his preference: Outside service and support remains an important item on corporate checklists, according to a survey by International Data Corp. (IDC) in Framingham, Mass. The firm's 1992 study of 1,600 large corporations found that $40 billion was targeted for those functions.

Despite the outpouring of spending, many firms are still opting to take the direct response route and bypass a third party. "If you have good in-house support and the dealers are not providing service or some sort of value-add, what do you need them for?" Coursey asks.

IS managers and analysts say that although on a good day direct response can put you in touch with your manufacturer, there can be drawbacks. Obtaining service and support via telephone is not always successful, they note, and on-site support usually costs extra.

Until recently, Jeff Newman, assistant vice president at Barclays Bank PLC in New York, says he liked direct response. His company uses PCs from Gateway 2000 Ltd. in North Sioux Falls, S.D., but Newman says he has lately been displeased with the vendor's service. "I've suggested to our purchasing department that we not use Gateway until they get their act together," he says.

**LANS**

| Percent of respondents using channel (Base: 215) | |
|---|---|
| Direct sales | 30% |
| Value-added resellers | 29% |
| Traditional retail stores | 19% |
| Direct response | 13% |
| Software specialty stores | 5% |
| Computer superstores | 3% |
| Consumer electronics/ Department stores | 0% |
| Office supply/ Warehouse clubs | 0% |

Percentages have been rounded

**IS professionals** are somewhat more likely to purchase LANs through VARs and less likely than others to purchase through traditional retail channels.

**Large organizations** are more likely to use direct sales and less likely to use direct response.

**BIGGEST BUYING FACTORS**

1. Technical support
2. Service
3. Quality brands

Source: Intelliquest, Inc./International Data Group

**PC APPLICATION SOFTWARE**

| Percent of respondents using channel (Base: 407) | |
|---|---|
| Direct response | 31% |
| Direct sales | 17% |
| Software specialty stores | 17% |
| Traditional retail stores | 11% |
| Value-added resellers | 11% |
| Computer superstores | 7% |
| Office supply/ Warehouse clubs | 5% |
| Consumer electronics/ Department stores | 2% |

Percentages have been rounded

**IS professionals** shared the same buying patterns as senior managers and departmental influencers.

**Large organizations** are most likely to purchase through direct response and software specialty stores and much less likely to buy from superstores and office suppliers.

**BIGGEST BUYING FACTORS**

1. Quality brands, value
2. Reputation
3. Technical support

Source: Intelliquest, Inc./International Data Group

What will be the long-term impact of all this channel surfing? Too early to tell, analysts say.

Some predict "channel polarization" will occur, in which resellers will gravitate toward the high and low ends. In this scenario, VARs and dealers will try to add service and support to their mix and in so doing, venture into systems integrators' traditional territory.

### Superstores to grow

On the low end, superstores and mass merchandisers are expected to play an increasingly larger role in providing commodity products such as desktop PCs.

"People are not in the middle anymore," notes Natalie Silvesti, research manager for the distribution group at IDC. "If you're a reseller who is trying to be everything to everybody, you're not going to succeed."

Microsoft is beginning to push its vision of large-account resellers, or LARs, as an alternative approach (see story above). Direct sales, long thought to be on its last legs, remains "a very strong channel," Intelliquest's Sharples says. He attributes the surprise finding to the fact that many IS managers may order products from their sales rep, but the products are actually shipped from an authorized company dealer. Thus, the direct sales factor can remain hidden.

That view is supported by the Intelliquest/IDG survey in which 76% of respondents said they were satisfied using direct sales. (In contrast, only 61% were satisfied with direct response.) Direct sales, Sharples concludes, "is by no means dead." •

*Joseph Maglitta, senior editor, management, contributed to this story.*

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# Ready for LARs?

SO WHAT'S THE FUTURE of software intermediaries in the new, expanded world of purchasing? If you ask Microsoft, it's LARs.

The initials stand for large-account reseller. Some new Microsoft agreements, including the licensing pacts announced last week, call for a company to have a LAR as a key point of contact.

Under Microsoft's plan, LARs will be responsible for carrying inventory, shipping, tracking and receiving payment for products. They have to be big enough to carry the full Microsoft line, as well as have both a technical support and an outbound sales force. LARs would report shipments quarterly to Microsoft.

The model exists today in Corporate Software, a reseller based in Canton, Mass. Officials there say they see a future in license housekeeping for large corporations.

Jim Tedesco, senior vendor manager at Corporate Software, says that handling administrative and distribution chores, such as matching documentation and disks, represents a good new niche for resellers.

"We can become a secondary publisher," Tedesco says, meaning his company will act as a secondary arm of the software house in question. "The vendors only want to go so far, while the customer still needs what he needs."

But, according to one user, such an agreement would be unnecessary. "We'd have to track this stuff anyway, so it's not that much harder," says Wayne Sadin, chief technology officer at a large Midwestern bank. "We take over some of the distribution chores, but we get more flexibility in return."

At Gillette, Greg Chetel, director of systems planning, says that since his organization is decentralized and he buys from a variety of sources, he's not looking for distributors to manage administrative tasks.

He said he would, however, like some sort of software to manage the distribution and the licensing bookkeeping. "I think the real breakthrough will be when somebody big comes out with a real software management system for the networks," he says.

Several companies, such as Novell, Inc., are working on such a package, but none has yet been able to deliver. Chetel says that although he hopes it's not too far off, he's not holding his breath. — *Carol Hildebrand and Christopher Lindquist*

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Quick. Think of a company with a better business UNIX environment than IBM.

Commentary

Joe Auer

# Take back the store

At last, some good financial news: Market forces and pressures have created an unprecedented opportunity for you to get a better deal from computer vendors. Today, suppliers are more vulnerable than ever.

It's time to take back the keys to the company store.

You can negotiate more effectively with your vendor if you are willing to follow some simple advice in the face of complex problems. A little perspective will help get you warmed up.

It's a testimony to some vendor's marketing ability that many customers will swear that the supplier is "a team member" or boast of a marketing rep who represents "their" concerns to vendor management.

The irony worsens when customers feel compelled to turn over large portions of their "secure" internal office space to a vendor, along with critical information about themselves, their executives and the very core of their proprietary operating procedures. This is a bad idea for two simple reasons:

*Fact:* The vendor wants to maximize its profits and minimize risks and responsibilities. Period.

*Fact:* Your objective is to minimize your costs and maximize performance. Period.

The most aggressive negotiators are challenging vendor's bargaining positions with tough contracts. But for many, the idea of confronting an important vendor such as IBM seems nerve-wracking or downright scary. Will they still like us? Will they still want us? Will they still want to service us? Will they still be our friend?

The mere thought of questioning IBM seems sacrilegious to many.

Don't be fooled. The sanctity of the customer-vendor relationship was choreographed (astonishingly well) by some of the best marketing organizations in history. Vendors work hard to control a customer by establishing rapport, even a long-term "personal" relationship with buyers.

But guess what? These are not real friends. The marketing representative has incentives to control you, not to negotiate with you. Insist on dealing with a much higher level of authority.

Some other common vendor gambits:

- **"Let us come closer."** The marketing rep says, "Why don't you give us some office space so we can service you better? We can work with you, get to know your people, your plans, your dreams. We'll be a team."

Hooey. Treat them like any other outsider that's trying to maximize profits on your money. Don't believe the interpersonal trust fairy tale while being insulted with contracts and documents that show they don't trust you at all.

Moreover, you should have all vendors (yes, including IBM) sign in every time and sign confidentiality and nondisclosure agreements. Take steps to cut off uncontrolled information flow. Remember: Whoever has the most information about the opponent wins!

- **"The all-Blue blues."** A special strategy encouraged by IBM. For some reason, perfectly sane executives, encouraged by their IBM rep and "friend," will still decide to become an all-IBM shop! In 1993! If this is your case, see the list at right — please!

Customer team members and IS professionals must recognize that every step in the acquisition process involves an opportunity to strengthen or weaken your position with the vendor.

Smart companies give away nothing, especially money. Vendor companies are smart. Are you?

---

Auer is president of International Computer Negotiations, Inc., a Winter Park, Fla., consultancy.

## How to make your best deal

To ward off common vendor ploys, it is helpful to have a methodology that can guide technology acquisitions. Here are some field-tested tips:

- Conduct a risk analysis of your transactions. This can provide management and team members with an insight into hidden problems.
- Help establish and train an interdisciplinary negotiations team. Include lawyers and businesspeople, then determine roles and responsibilities.
- Assess specific negotiation requirements. This includes any products and services to be acquired.
- Identify people, products and services in the marketplace to fulfill those requirements.
- Collect acquisition objectives from each professional discipline in your organization.
- Help prioritize objectives to determine your negotiating position. Prepare a negotiations position paper.
- Conduct a bidder's conference. Input your request for proposal.
- Help evaluate vendor inducements and representations.
- Qualify two or more potential suppliers for "The Zone of Consideration."
- Negotiate with potential suppliers who fall into this zone.
- Assist in selection of vendors whose committed deliverables meet your objectives.
- Work with your attorneys to develop a contract containing the specific results in your objectives.
- Establish procedures to monitor, document, control and administer vendor performance.
- Assist in developing remedies in the event of vendor nonperformance.

*—Joe Auer*

# Calendar

### FEB. 28 - MARCH 6

**CompTel '93.** Washington, D.C., Feb. 28 - March 2 — Contact: Trade Associates, Inc., Rockville, Md. (301) 468-3210.

**Share '93.** San Francisco, Feb. 28-March 5 — Contact: Share headquarters, Chicago, Ill. (312) 822-0932.

**1993 International Computer Storage Program.** San Jose, Calif., March 1-3 — Contact: Joe Molina, Technology Forums Ltd., Lino Lakes, Minn. (612) 784-2379.

**Key Issues in Managing Information Systems.** Evanston, Ill., March 1-3 — Contact: Northwestern University, Evanston, Ill. (708) 467-1366.

**Advanced Object-Oriented Analysis and Design: The State of the Art.** San Diego. March 1-4 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

**Sensors Expo West '93.** San Jose, Calif., March 2-4 — Contact: Expocon Management Associates, Inc., Trumbull, Conn. (203) 374-1411.

**Pen Based Expo.** Boston, March 3-4 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-0526.

**Mobile World.** Boston, March 3-5 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-0526.

### MARCH 7 - MARCH 13

**Geographic Information Systems (GIS) in Business '93 Conference.** Boston, March 7-10 — Contact: GIS World, Fort Collins, Colo. (303) 223-4848.

**First Workshop on Object-Oriented Design '93.** Snowbird, Utah, March 8-10 — Contact: Object-Oriented Software Engineering, Brookfield, Wis. (414) 789-5253.

**XWorld.** New York, March 8-11 — Contact: XWorld, New York, N.Y. (212) 274-9135.

**Internetworking with NetWare.** Boston, March 9-10 — Contact: Center for Advanced Professional Development, Santa Ana, Calif. (714) 261-0240.

**Technical Symposium on Computer Science Education.** Phoenix, March 10-12 — Contact: Association for Computing Machinery, New York, N.Y. (212) 869-7440.

### MARCH 14 - MARCH 20

**National Automated Clearing House Association Conference (NACHA).** San Diego, March 14-17 — Contact: NACHA, Herndon, Va. (703) 742-9190.

**UniForum Technology Managers' Conference.** San Francisco, March 15-16 — Contact: UniForum 1993, Registration Dept., Carol Stream, Ill. (708) 260-0396.

**13th Annual Conference: "Clinical Information Systems."** Park City, Utah, March 15-17 — Contact: Judy Murphy, Society for Clinical Data Management Systems, (414) 647-3244.

**The Workgroup Computing Conference.** Washington, D.C., March 18-19 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3870.

**The 1993 Long Island Conference of Artificial Intelligence and Computer Graphics.** New York, March 20 — Contact: New York Institute of Technology, Old Westbury, N.Y. (516) 686-7623.

### MARCH 21 - MARCH 27

**PageMaker Conference.** Boston, March 22-23 — Contact: PageMaker Conference and Exhibition, Seattle, Wash. (206) 633-3431.

**Apollo Users Group International Conference.** Chicago, March 22-24 — Contact: Information Resources, Inc., Chicago, Ill. (312) 726-1221.

**The Data Warehouse: Design and Implementation.** San Francisco, March 22-24 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

**The Second International Conference on Software Methods.** Orlando, Fla., March 22-24 — Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 394-8305.

**EDI 2000.** Boston, March 23-24 — Contact: EDI 2000, Dallas, Texas (214) 475-1838.

**Hands-On Unix Internetworking.** San Francisco, March 24-26 — Contact: American Research Group, Inc., Cary, N.C. (919) 380-0097.

**Association for Corporate Growth 1993 Conference.** Orlando, Fla., March 24-27 — Contact: The Association for Corporate Growth, Inc., Glenview, Ill. (708) 699-1331.

### Dealmaking

Want to learn ways to best your vendors? International Computer Negotiations, Inc. is running a series of seminars to help IS managers cut better deals with suppliers. Seminars range from one to three days and are offered in locations coast to coast.

Coming up:

**Computer Negotiations Workshop.** March 3-5, Dallas; April 19-21, San Francisco; May 19-21, Stamford, Conn.

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# Performance ANXIETY

*When it comes to knowing what technology is doing for the business, some IS shops are in the dark. But you don't have to be.*

By Dan Allen

*"How good are our systems?" the business manager asks his technology officer, thinking this time he'll get a meaningful answer.*

*"About as good as those of our industry peers," the technology chief answers.*

*The manager tries again: "But are we getting what the business really needs?"*

*"You bet. We've implemented consistent architecture across the company and are planning...."*

*The manager interrupts with obvious irritation. "What about that customer information database we need to implement our basic marketing strategy? Why is that two years behind schedule?"*

*No response.*

This information systems chief is out of touch. His business manager doesn't want to hear about pretty front ends or future plans. What he's asking for — no, *demanding* — is some accounting of how systems are meeting business needs today.

And this IS chief doesn't deliver.

But that's not to say *you* won't. There's a one-two punch that savvy IS managers use to reveal the naked truth about IS performance: an independent review plus a comprehensive review, a study that concentrates on a particular problem or question and recommends an action plan. Adding these two techniques to your performance review program will give you a complete picture of what IS is doing.

Regular, independent review of IS performance — by internal electronic data processing auditors, outside consultants or internal IS managers with no conflict of interest — acts as a check and balance to any internal performance evaluation in your company (see story page 90). An independent set of eyes has an easier time seeing the contradictions that often riddle bureaucratic thinking.

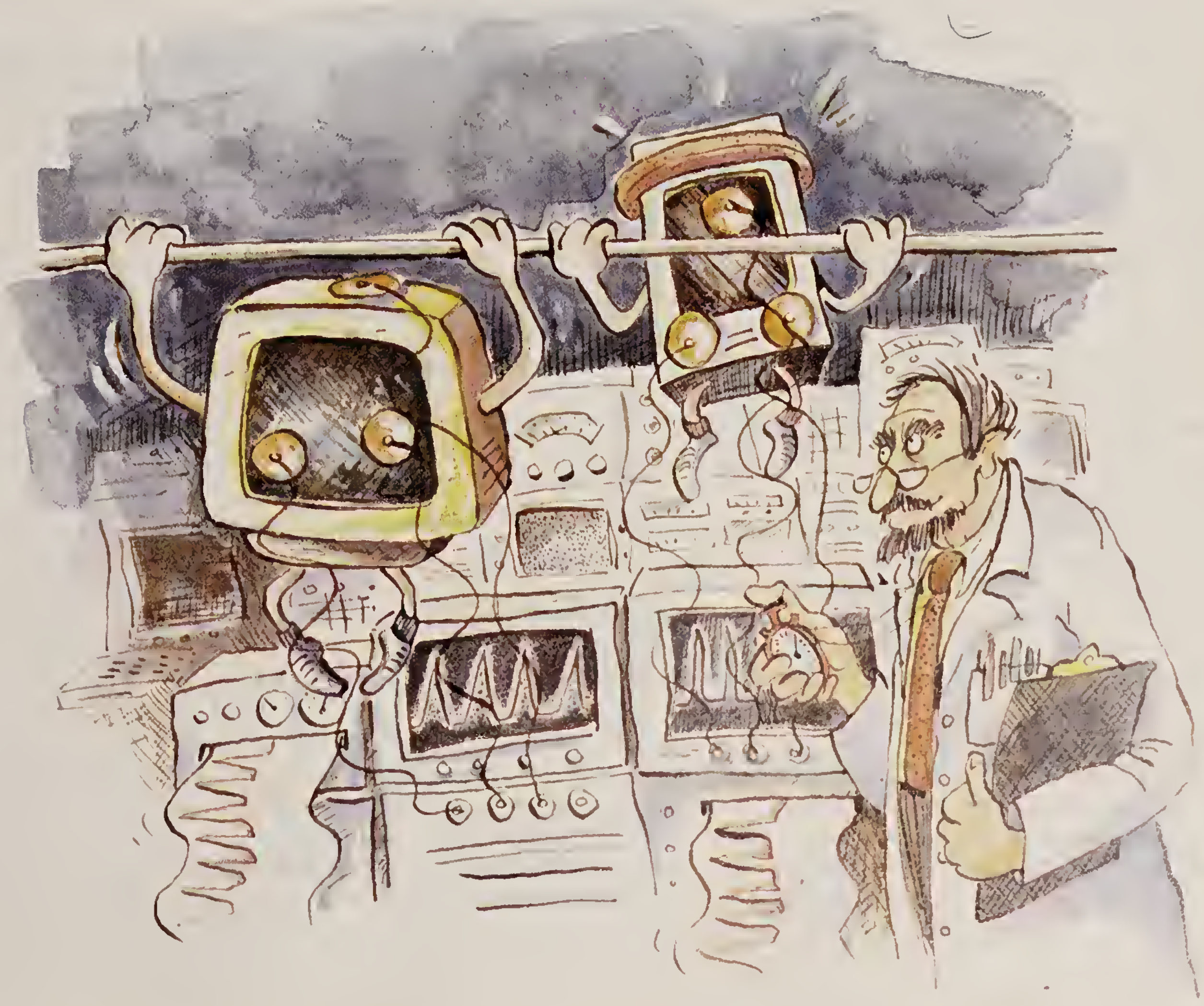
External review keeps everyone honest. When people are scrutinized, they want to look good and may bend numbers and findings so they come out favorably. Independent review gets around the problem of doctoring results.

Take a typical system uptime report that claims host systems are available 98% of the time. "Lies, lies, all lies!" is how one system operator I talked to referred to his company's uptime reports. After all, uptime can mean different things, depending on how you look at it:

- All systems available per customer request.
- All systems available per IS schedule.
- All systems available per IS schedule, with no last-minute changes to the schedule.
- All systems available with no last-minute schedule changes and all features working.
- Overnight batch jobs run without error reports reaching management.

Such a broad range of definitions leaves a lot of room for interpretation. Interpretation enables the previously mentioned shop to claim 98% uptime even while it experiences, three times a week on average, overnight batch problems requiring programmer intervention and 24-hour job delays.

**Performance anxiety,** *page 90*



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Allen is a quality manager at a large insurance company in Hartford, Conn., where a significant part of his work entails establishing effective work practices between business and technical staffs. He is a former technology consultant at Andersen Consulting and Price Waterhouse.

# IS performance

CONTINUED FROM PAGE 89

Independent reviews can help clarify this semantic confusion. That's critical because poor communication is one cause of the poor quality of IS engineering. Imagine a bunch of people who are unable to communicate on the simple concept of "uptime" trying to communicate (i.e., "program") precise and astronomically complex messages to a computer. It's no wonder so many systems are lousy; it's a wonder they work at all.

Independent review can clear up other fuzzy areas, such as completing projects within budget. A team might complete projects within budget 100% of the time but might do so by postponing development of essential functions until after the cutover to production. The team looks great on performance reports, but postponing essential functions decreases productivity in the long run.

The critical and discerning independent review unearths this type of activity. When digging, reviewers have to think in broad terms. Dubious practices often point to complex problems.

For example, postponing essential development may be part of a general lack of coordination between users and programmers. It could be that neither group understands its role. The programming team could feel that "those darn users can't explain what they want" and that the postponed requirements are outside the scope of the original work plan. For their part, the users could believe that IS provides inadequate leadership in requirements definition.

In such messy circumstances, independent reviewers do well to untangle and describe the problem and avoid the trap of pointing fingers at one side or the other.

### Nowhere to hide

A regular independent review is key to supplying an organization with fresh perspectives on IS performance. It helps prevent the "go with the flow" thinking that dominates bureaucracies.

While independent reviews get a company thinking, however, they rarely offer operational or management suggestions for improvement. That's why comprehensive reviews are a powerful complement to regular independent reviews. A comprehensive review, handled by a team of insiders and outsiders, isn't finished until there is an improvement plan.

The people who make up the comprehensive review task force can include internal middle and upper business and IS managers, other key members of the organization and consultants. There should be at least one "heavy hitter" on the team, an expert with good judgment and vast technical knowledge. In addition, the team needs an influential sponsor to make sure its suggestions get carried out.

The group's first act is to determine, with the sponsor, a mission for the review. Then it gathers and analyzes information and presents a formal report at the end of its work.

Think of the comprehensive review group as the National Guard of IS performance: It comes together to tackle a specific problem and then disperses, leaving an action plan behind to improve the situation and keep it stable.

The scope of the review can include any or all parts of IS. Typical subjects the team scrutinizes are strategic planning, organizational structure, productivity and application development methods and tools. A good team is marked by its ability to take a subject and consider all the angles: technical, operational, economic and political.

For instance, a comprehensive review team might come into play after a routine performance review discovers that programmer productivity has been dismal. The team's mission is to determine how to make programmers more productive.

While on the surface it appears that the problem has to do with inadequate programming tools, upon further examination, the team learns that coders aren't using disciplined engineering techniques such as structured program design, coding and testing. After discuss-

---

# Take a good look at yourself

## How to make IS performance self-examination more thorough

By Dan Allen

The "me" decade of the '70s — in which self-analysis and self-absorption reigned — might be over for the general public. But for information systems departments, self-examination is still going strong. We are more interested than ever in finding out how well we're doing, how well we are performing.

That's because our jobs depend on whether we're giving our businesses what they want in terms of technology and staff performance.

Monitoring IS performance internally begins with a mission statement, which defines what IS does. That definition highlights the areas of utmost importance to the IS staff and the business, areas you will focus performance measurement on.

Unfortunately, good mission statements are about as rare as intellectually stimulating television sitcoms.

A mission statement should be the following:

- Specific in scope.
- Consistent with senior management's view.
- Coordinated with the missions of other business units.
- Specific about what standards it expects for performance.
- Well-publicized.

Here's an example of a solid mission statement:

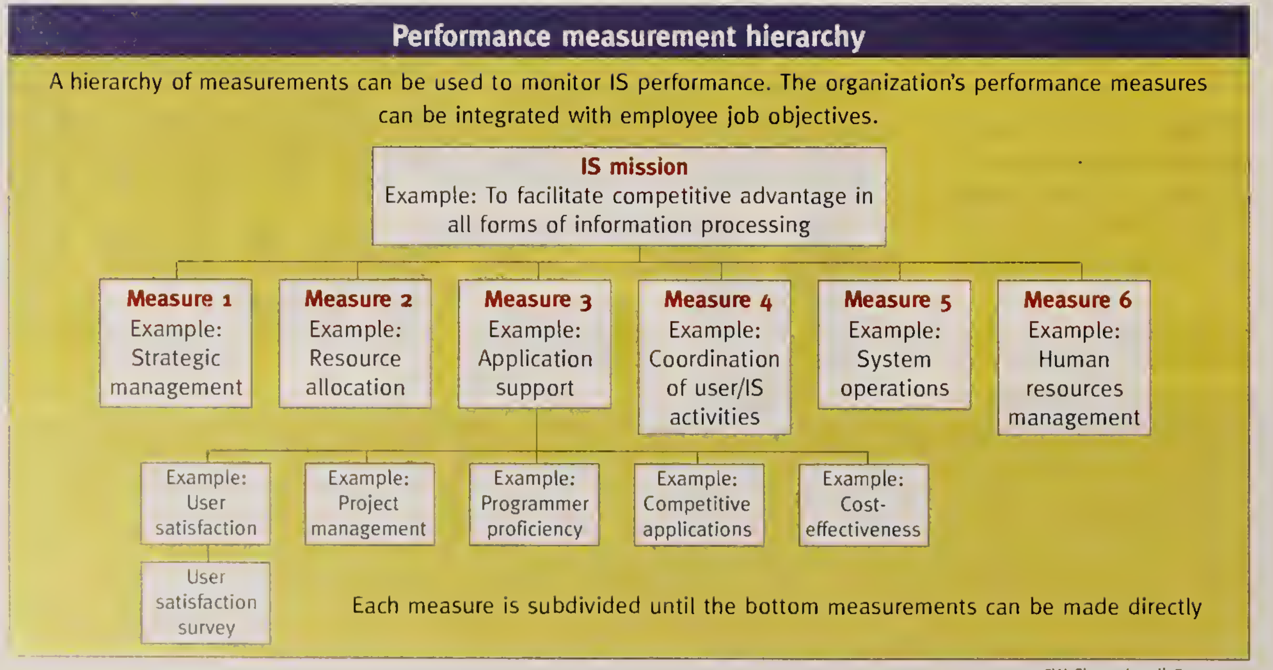
*IS operates the organization's centralized computing resources, including certain computers, data storage devices and telecommunications resources. The precise definition of what resources are "centralized" and our specific standards for performance are given in another document entitled "Resources IS Operates," the details of which we continually review with the business. We have sole responsibility for allowing changes to hardware and software configurations so that changes do not cause unexpected results.*

*We strive for excellence in every aspect, with "excellence" defined by our contribution to our sponsoring organization's success.*

A good mission statement will reveal the key areas to concentrate your performance measurement on. If your mission statement says something like: "To facilitate competitive advantage in all forms of information processing," you'll likely want performance information on strategic management, resource allocation and application support.

**Performance measurement hierarchy**

A hierarchy of measurements can be used to monitor IS performance. The organization's performance measures can be integrated with employee job objectives.


IS mission
Example: To facilitate competitive advantage in all forms of information processing
Measure 1 Example: Strategic management
Measure 2 Example: Resource allocation
Measure 3 Example: Application support
Measure 4 Example: Coordination of user/IS activities
Measure 5 Example: System operations
Measure 6 Example: Human resources management
Example: User satisfaction
Example: Project management
Example: Programmer proficiency
Example: Competitive applications
Example: Cost-effectiveness
User satisfaction survey
Each measure is subdivided until the bottom measurements can be made directly

CW Chart: Janell Genovese

These more general areas can be broken down into smaller measures until you get to items so specific it takes only one person or a small team to gather that data (see chart above). For example, one way to measure IS performance in the area of "application support" is to gauge user satisfaction. You gather data in this area by putting a staff member in charge of doing a user satisfaction survey.

It is important to have performance standards in place so you know whether performance is above or below where it should be. If your shop uses its CPUs aggressively, the standard for CPU use might be 85%. Anything below that number signifies poor performance.

Linking IS performance standards to people's job objectives is a powerful way to make sure you achieve those standards.

Everyone should be aware of how the shop is doing in terms of meeting its goals, so regular performance reports and reviews from IS managers are key. Such feedback might consist of system availability reports, development backlog status reports and staff evaluations.

Informal and continuous feedback is an effective and inexpensive way to ensure that performance is up to par. For example, if the members of a programming team and a payment processing team are all responsible for fast, accurate posting of payments, the most economical way to report on how the system is performing is in casual conversation, say, at lunch.

Such informal reporting often leads programmers to address problems even before managers know anything is amiss.

You will likely not see immediate improvement right after a performance measurement program is put in place. But just sit tight. Give your formal and informal reports and monitoring time to work. You'll notice a gradual improvement in performance as staff members find out about problem areas and try to fix them.

Measurements spur people to action because they show, in black and white, what they should be achieving.

Typically, you'll see improvement in about two or three reporting cycles. After that grace period, if you notice things aren't getting any better and staff members aren't talking to management about problems, then take action to get performance to where you want it. •

ing the situation with the programmers, the team members uncover skepticism toward structured programming.

What started as a technical problem turns out to be a cultural one. Now that they have discovered the root of the problem, the team can recommend a plan of attack for poor productivity.

In fact, more often than not "soft" factors such as culture or politics cause bad performance. For instance, in order to please potential customers, one vendor's sales group opted for some political maneuvering. It forced so many technically awkward customizations into the vendor's manufacturing resource planning system that the product was full of bugs. The system, in use at several of the largest companies in the U.S., was so unstable that certain of the user companies' top executives complained directly to the vendor's chief executive officer.

Currently, more than 100 programmers and analysts, each of whom has been pulled from his regular job for the multiyear project, are working on fixing the system.

**Two-headed coin**

A good comprehensive review can work wonders, but one done poorly can have serious repercussions. Bad reviews — ones that don't delve deep enough into the problem or that don't explore all the angles — can riddle the company with half-baked policies that can waste a lot of time and cost a lot of money.

One company I know of conducted a two-month comprehensive review to find the right organizational structure for its IS group. The review group included a team of consultants brought on board at a cost of more than $100,000. The company also added a part-time administrative assistant to the payroll to support the effort.

Unfortunately, the recommendation for the new structure was not based on deep review but on what the IS chief wanted, which amounted to a 1970s organizational structure. In the setup, the data center, application development, planning and IS security departments reported directly to the IS executive.

Under this reporting structure, IS' customer responsibility was vague. For example, when a production problem occurred, customers did not know whether to call the data center or applications development group.

The comprehensive review dodged all of the sensitive political issues involved in rethinking the IS setup and took the safe course.

**Can't be afraid of change**

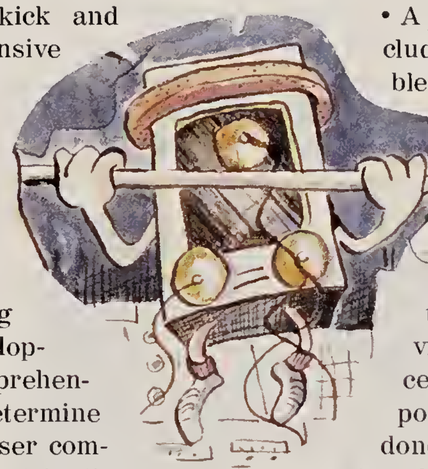
Nothing is sacred when the comprehensive review staff is trying to rectify a problem. But one of the most common mistakes comprehensive review teams make is thinking the mission statement is sacrosanct. No matter how much IS management might kick and scream, the comprehensive review team can't be shy about suggesting a change in the mission statement if it is important to the business' well-being.

For example, if a company is having problems with development delays, the comprehensive review might determine that poor developer/user communication is a contributing cause. The team suspects that the miscommunication is because of the fact that the IS department is a centralized shop in what is essentially a decentralized business. Transferring IS staff into business units will likely help requirements gathering and clear up misunderstanding.

However, if the IS department's official mission states that it alone is responsible for IS personnel, it may balk at losing that control.

An ineffective comprehensive review team will accept IS' mission and dodge the politically charged issue of changing it. Thus hamstrung, the review team can only come up with weak recommendations with little benefit.

This company will be stuck in a vicious cycle, pursuing a flawed mission and pointing to the comprehensive review team's finding for justification. Most disturbing is that their development delays won't get any better.



One part of the comprehensive review process IS shops usually underestimate is the development of a written report summarizing the team's finding and offering recommendations. The report crystalizes the team's analysis.

Reports contain the following:

- The review's mission (why it was commissioned) and who participated.
- Findings and conclusions, presented so they support the recommended plan of action. Financial analyses fit into this section.
- A plan for improvement, including concrete deliverables, due dates and responsibilities.

The report is not an addendum to the "real work" of information gathering and analysis. In fact, a lot of the thinking about the review occurs during the process of putting together a report. If the report has been done right, it becomes a working document — a reference manual — during implementation of the team's suggestions.

**Timing is everything**

It's easy to underestimate the time required to perform a comprehensive review because it is a discovery exercise; the team is basically treading into the unknown. A well-managed review takes between five and 40 person-months to be effective. For best results, you should put people on the review full time.

The report typically consumes about one-third to one-half of the time of the review, depending on the number of people suggesting changes and the controversy surrounding the results.

Even if an organization is entirely satisfied with its performance, all functions, including management, can benefit from a comprehensive review every three years. Such frequent review is driven by the current pace of innovation in IS methods and products. •

## The test of a good shop

Deciding what to measure is like deciding which features to put in a system; every organization has different needs.

However, certain areas — strategic management, resource allocation, application support, system operations and human resources management — tend to be high on many measurement hit lists. Getting answers to the following questions can help you go from mediocre to stellar IS and systems performance:

**Resource allocation**

Effective resource allocation amounts to design work: IS managers analyze requirements and trade-offs and come up with a solution. Just as other design work suffers from poorly structured approaches, undisciplined resource allocation yields mediocre systems and service.

To evaluate resource allocation, management can look first to see how well IS has defined a structured approach, then to see how well the approach is implemented.

- Is senior management involved in resource allocation?
- Is there centralized backlog management?
- Are there written agreements in place between IS and user departments, specifying their respective responsibilities?
- Are there guidelines for evaluating the merit of projects? Do these guidelines describe how IS projects should tie to corporate strategy?

**Application software development and maintenance**

Software support depends on a chain of functions: methodology, personnel management, tools, training and leadership. At a higher level, it depends on methodical resource allocation. Weakness in any of these areas diminishes overall effectiveness.

- Are users satisfied?
- Do we have a standard, rigorous and robust development/maintenance methodology? Do we use it?
- Are projects completed within schedule and budget?
- Are programmers using disciplined techniques?
- Are our computer-aided software engineering (CASE) tools integrated with our methodology?
- Is our training attuned to our methodology and CASE?

**System operations**

Good operations are characterized by stable environments, decreasing human involvement and a consolidated data center. Any measurement of system operations performance should indicate where a shop is in relation to these characteristics.

- How frequent are production problems?
- Are there mechanisms for software change management?
- Do operations comply with production schedules?
- Are operations cost-effective?
- Do we use automated system operations software?
- How much or how well do we utilize resources?
- Is network management in place?

**Human resources management**

Keeping tabs on staff helps with recruiting, training, career planning and turnover.

- Are job responsibilities integrated with the group's explicit objectives?
- Do we track productivity and performance evaluation?
- How well does our recruiting program work?
- What is the turnover level?
- Do we enable career progression/planning?
- Do we have a training strategy?

**Strategic management**

- Is IS integrated into corporate strategy from a customer's perspective?
- How clear is the communication between IS and the organization?
- Is IS cost-effective? Is it productive?
- Is IS structure and staffing appropriate? Why?
- How well and how quickly does the company assimilate new technology?
- Does IS performance meet standards?

## Benchmarking

Some companies like to round out their core performance review program (internal review, independent review and comprehensive review) by including industry benchmark analysis.

This approach consists of collecting data about a group of organizations and seeing where yours ranks in comparison.

Keep in mind, however, that collecting data for benchmark analysis is a tremendous effort. Normalizing the data (i.e., adjusting it so that one compares "apples to apples") can be almost impossible.

Consulting firm Gartner Group, Inc. in Stamford, Conn., advises using industry benchmarking only for analyzing broad trends.

# Who says programmers are dull?

from the trenches

By Don Burleson

OUTSIDERS OFTEN stereotype computer professionals, particularly programmers, as cerebral whiz kids devoid of personality, who find solace and companionship in their terminals. (Remember the line in *Doonesbury* about the sunscreen that was "preferred by nine out of 10 programmers?") Only those who work with computer people on a daily basis can really appreciate their uniquely warped humor.

When I first entered computing, I assumed this was a profession dominated by humorless people wearing white socks and speaking in acronyms. As I got to know the people better, however, I came to realize that this is a field with a passion for practical jokes, especially ones that involve planting unexpected bugs in programs.

**Cat and mouse**

The latest one making the rounds is a bug that can be attached to Windows. Whenever a Windows pop-up or check box appears, this software instructs the icon to run away from your mouse. This extremely annoying joke makes even the most trivial Windows chore an exciting video experience.

But software practical jokes have been around for years. Remember the "Cookie Monster?" This legendary practical joke resided on a disk in an IBM 360 shop and would randomly interrupt a user's session, demanding "Gimme cookie." Startled users quickly discovered that when they typed "cookie," the routine replied "thank you" and disappeared, relocating itself to another disk to avoid detection.

When I was in college, someone placed a read-protected program in the community program pool (a shared library where programmers could share files), naming it "Runme." Of course, curious programming students ran this program, only to discover that it would send indecent electronic-mail messages to professors with their sign-on names attached.

In my first job, I was introduced to a malicious mainframer who hated end users so much that he hung a sign on his wall that declared, "User is a four-letter word." This guy developed a routine he called "Flashfinger" that displayed Mickey Mouse making an obscene gesture for 50 milliseconds, which is about the minimum threshold of human perception. At this high speed, users were never really sure if they saw something, and to my knowledge, Flashfinger still resides inside the original application.

**Better call a plumber**

Almost all PC users are aware of "Drain," a practical joke that's been circulating for years. Programming pranksters add it to the AUTOEXEC.BAT file, and when the PC is turned on, a "severe error" message is displayed. The user is notified that water has been detected in his disk drive. The routine then "spin dries" the disk drive, complete with sound effects. Countless calls to the company help desk for water problems are attributed to this "humor," and I have witnessed programmers collapse from laughter after this prank.

Another popular gag capitalizes on the predisposition of end users to enter profane words into the relocate field of lookup lists. For instance, we've been known, when coding relocatable lookup screens, to add an exit that displays the message, "User Jones, I am not accustomed to such filthy language," whenever an obscene character string is entered into the relocate field. This exit is only invoked when the user enters a naughty word, and you would be amazed how many end users discover this feature.

As computers become more powerful, I'm sure the humor will become even more sophisticated and that we will find many more creative practical jokes.

Personally, I still enjoy the old-fashioned kind. Have you ever taken the microchips out of those musical greeting cards? Try dropping one into the bowels of a friend's (or enemy's) display screen. It will provide them with days of round-the-clock music, playing the same song, ad nauseam. It's amazing how long the batteries last on those things.

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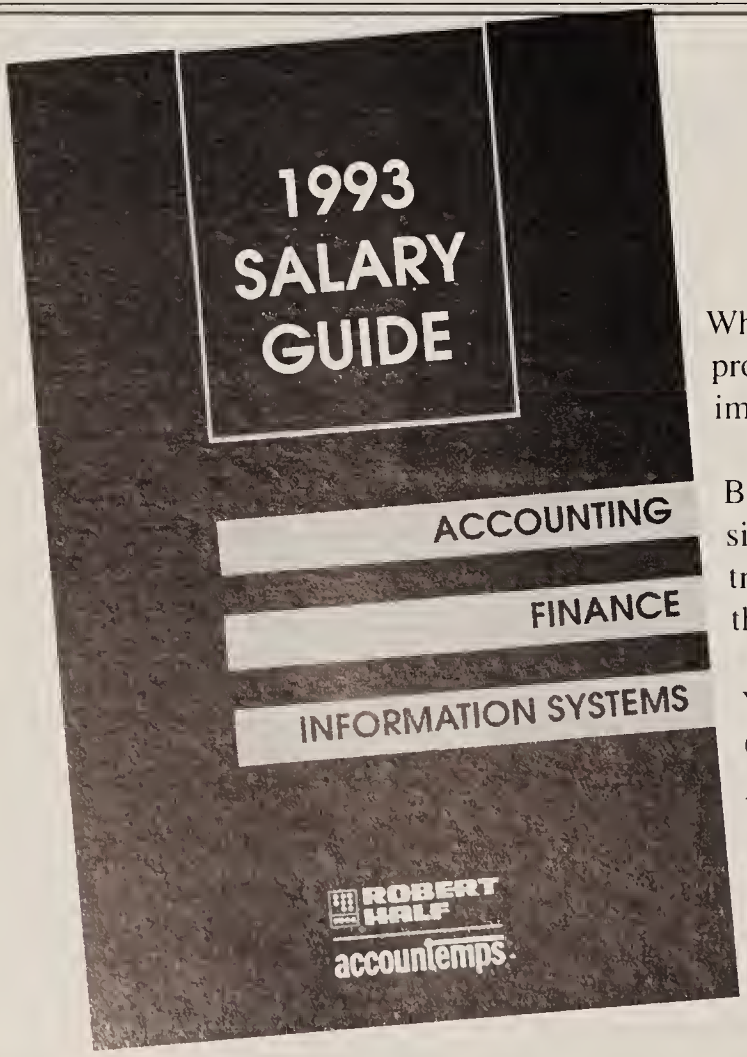
Burleson is a database administrator at Thomson Professional Publishing Information Technology in Webster, N.Y.

**What's it really like out there? Look around you. What are typical co-workers like? How are IS department meetings really run?** DOES THE GRASS LOOK GREENER FROM SOMEONE ELSE'S DESK? IS THERE MORE TO A JOB IN THE IS SHOP THAN MEETS THE EYE? SEND YOUR OBSERVATIONS — SERIOUS OR OFFBEAT, BUT ALWAYS CANDID — TO KELLY E. SEWELL, ASSISTANT EDITOR, FEATURES.



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Job close-up

# Unix administrators: Masters of technology and communication

By Leslie Goff

Unix systems administration is one of those information systems areas where technical skills take a backseat to analytical and communication skills.

That's not to say you don't need technical experience. Unix is a highly technical operating system. The nature of the beast — a multiuser, multitasking operating system — means it is nearly always implemented in a distributed environment.

Unix systems administrators who oversee and maintain these Unix networks need a combination of systems know-how, hands-on connectivity experience and a can-do attitude.

Because Unix networks are starting to grow in the corporate arena — particularly in financial services — Unix systems administration is a well-kept secret. People with this job often get into the limelight of high-level IS planning, and because their function is so critical to maintaining user networks, the pay is handsome.

The job's appeal is the dual challenge of mastering the technology and communicating its capabilities to users. Rob Kolstad, who has worked in a variety of Unix-related positions, including systems administration, and is currently program manager at Berkeley Software Design in Falls Church, Va., likens the job to "being the emergency room doctor — you have to keep the systems running, and you have to be prepared for anything."

"Cook and bottle washer is a good term for the job," says Wayne Schmidt, a systems administrator at Salomon Brothers, Inc. in New York. He says he has to make sure systems integration — getting different applications to work together — goes smoothly. "It's one of the most adaptable IS jobs you could have," he says.

Schmidt oversees a network of Sun Microsystems, Inc. Scalable Processor Architecture workstations at Salomon Brothers. He is responsible for distributing data, providing resources to users, installing and updating software, system security, troubleshooting and maintenance.

Schmidt, who was a fine arts major in college, was introduced to IS when he accepted a student job in the computer sciences department to help him with his artwork, which involved computer graphics.

"I felt that I didn't have enough computer skills," he says. "I was restricted to being a user, and I had the biases that anyone who hasn't worked with technology would have — some fear of what the technology can do. So I took the job at the computer science department and picked [Unix] up as best as I could."

He received his first formal training in Unix at his first job as a Unix systems administrator at Salomon Brothers, where he took a course in Solaris. His analytical skills were key to landing his position.

"You need to be familiar on some level with programming, hardware, aspects of how the network is constructed, and if you can't solve a particular problem, you have to gather enough information for someone whose specialty is to solve the problem."

This could be considered a drawback because "when everything works right, no one knows you exist," notes Sam Aruti, a systems administrator at EJV Partners LP, a financial services company in New York.

### What's next?

Although Aruti says experience as a Unix systems administrator could serve as a primer for assuming more responsibility for architectural and infrastructure issues, there is no built-in career path from the post.

"The way the job is structured, there's really no place to go up from here," notes Joe Kaplenk, a senior software programmer responsible for Unix systems administration at Loyola University in Chicago. "It's harder to advance than from other positions, such as a systems analyst, probably because Unix tends to be specialized and it demands a lot of attention."

### Specialist in demand

The trade-off is that the job pays well, especially in the financial services industry, where Unix specialists are in high demand. Entry-level salaries hover around $40,000 and can go up to as much as $70,000. Salaries can go even higher for those in high-leverage positions where they are responsible for making sure a computer is never down, and they wear a beeper all the time, Kolstad says. Salaries on the West Coast average about $65,000 a year.

To earn their keep, Unix systems administrators end up putting in 8- to 12-hour days as well as all-nighters and weekends when there is a major problem.

Satisfaction on the job comes with overcoming challenges, such as when Kolstad successfully wired several different buildings together under a concrete parking lot. "It isn't really a career goal that you wake up and aspire to," Kolstad says. It's still a vague post with no real curricula in colleges, no real specific job description and an unclear career path. "But if you find that you have a knack for solving problems, and management recognizes that you're the person keeping people productive," then it just might be for you.

---

Goff is a New York-based free-lance writer.

### Unix systems administrator

**JOB DESCRIPTION:**
Responsible for integrating and maintaining Unix networks and applications.

**SALARY:**
$40,000 to $70,000

**EXPERIENCE:**
Three to four years of working with Unix; software testing and evaluation; light programming and systems development; understanding of connectivity issues; and ability to handle hands-on aspects of the network.

**EDUCATION:**
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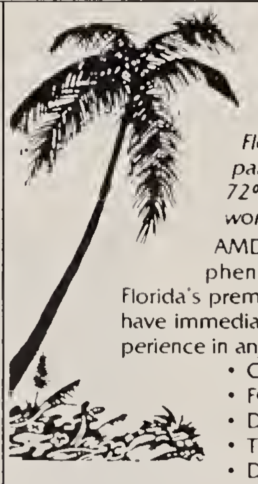

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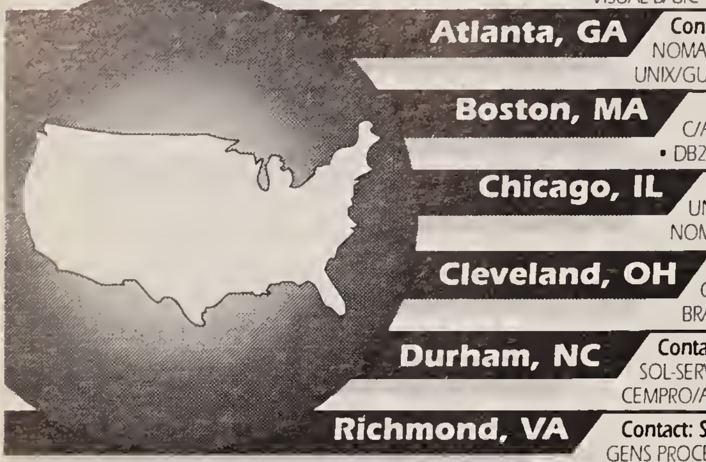

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Regional scope

# Atlanta: Entry-level haven

By Jill Vitiello

Atlanta! Ever since Scarlett O'Hara uttered the word in *Gone With the Wind*, Atlanta seems to come with its own exclamation point. Scarlett saw Atlanta as a land of opportunity, and today, many information systems professionals share her opinion of the Southeastern city.

Unemployed IS pros from the Northeast and California have flocked to the city in search of jobs, creating a large talent pool. "Employers have their pick of qualified candidates," says Tom Brasswell, vice president of data processing at Genuine Parts Co. in Atlanta.

Yet, despite Atlanta's charms, it is not an IS Shangri-la. Displaced senior programmer/analysts and managers have a difficult time finding work because most openings are for lower level positions.

Hiring managers in Atlanta are eager to find programmers with about three years of experience in Cobol and C. Some are launching major IS projects requiring expertise in telecommunications, handheld devices and graphical user interfaces; others are looking for IS professionals with object-oriented experience.

According to Clark Berryman, director of data processing at Atlantic American Corp., Atlanta's hottest IS careers are reserved for professionals who make the client/server platforms successful — including experts in communications, local- and wide-area networks.

## Can't keep up

Home Depot, Inc.'s Information Services Group of 225 professionals is growing so rapidly that the firm hired Dana Milner, an independent recruiter and human resources consultant, to recruit the best candidates for some 40 IS projects throughout the company.

Brasswell plans to add two or three people to his staff of 48 and is looking for IS workers with experience in programming handheld devices. He's had no trouble garnering solid resumes: His newspaper ad brought in close to 200 resumes.

Brasswell says his group recently developed shop management software, a computer service for its customers. The software helps retailers turn estimates into orders, then converts orders into invoices while alerting inventory control that replacements are needed.

Even IS shops that have gradually cut back their staffs to accommodate budget constraints are looking forward to right-sizing programs that will restore lost positions, says Doug Chrietzburg, systems development manager at the *Atlanta Journal-Constitution*. He said he hopes to add two people to his staff of 75 to manage a project that will streamline the newspaper's circulation system and eventually migrate it from the mainframe to a midrange platform.

## 'Instant audience'

But the most promise exists for object-oriented design and development individuals, says Gregory Scileppi, vice president of IS recruitment in the Southeast at Robert Half International, Inc. Scileppi reports that because there aren't enough of them to meet demands, such professionals "get an instant audience with employers and can name their price" when negotiating for jobs.

Some hands-on object-oriented pros command anywhere from $45,000 to $75,000. This is high for Atlanta, where salaries are typically about 10% or 15% below those in the Northeast. For example, a programmer/analyst in Atlanta makes $34,589, compared with $38,263 in New York, according to *Computerworld*'s 1992 Salary Survey.

Berryman notes that the city is the site of the 1996 Summer Olympics, which will increase the influx of foreign employers into the area. Atlantans hope this growth will continue even after the Olympics have come and gone.

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Vitiello is a free-lance writer based in East Brunswick, N.J.

## REGIONAL SCOPE Atlanta

Salary averages

| | | |
|---|---|---|
| Systems and programming manager | 1992 | $53,458 |
| | 1991 | $52,319 |
| Senior systems analyst | 1992 | $45,370 |
| | 1991 | $41,906 |
| Programmer | 1992 | $28,222 |
| | 1991 | $26,362 |

Unemployment rates

| | |
|---|---|
| November 1992 | 6.0% |
| 1991 | 4.7% |

Median housing costs (Metropolitan area)

| | |
|---|---|
| 1990 | $86,400 |
| 1991 | $89,300 |

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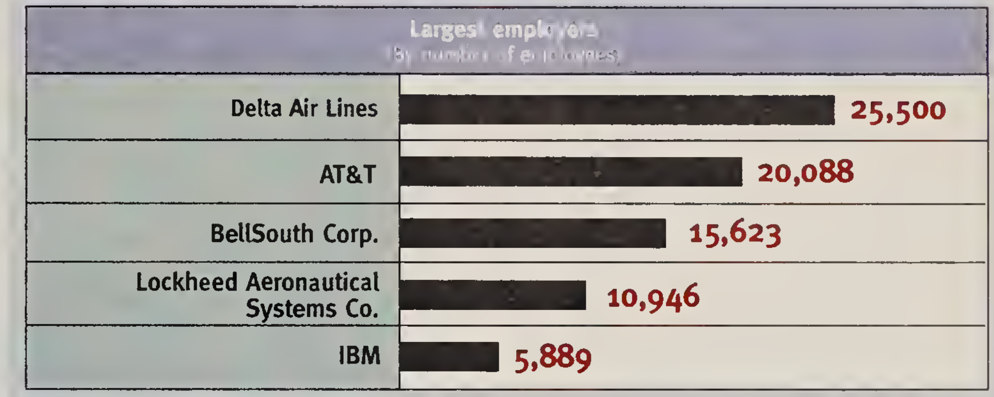

Sources: Georgia Dept. of Labor; *Atlanta Business Chronicle*, National Association of Realtors; 1991, 1992 *Computerworld* salary surveys; Atlanta Convention and Visitors Bureau.

CW Chart: Michael Siggins

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Atlanta, GA 30348-5006
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Liberty Savings Bank has an opening in their Northeast Atlanta (Tucker, GA) Information Systems Department for a Programmer/Analyst to support real estate systems.

The environment is an IBM 4381 with VM/DOS/VSE, CICS, VTAM, VSAM, and CMS. The primary application software is an integrated COBOL banking software package from SYSTEMATICS, Inc.

Qualifications for the opening include a min. of 2 years COBOL programming, IBM experience, knowledge of VSE JCL, degree or equivalent experience, neat appearance and the ability to work well with users in needs assessment, project planning & testing. Banking experience is preferred; SYSTEMATICS, Inc. is a plus.

Liberty offers a challenging environment, excellent working conditions, and competitive compensation and benefits. If you have the required experience and can work in a team environment, send your DETAILED resume and salary history to: **LIBERTY SAVINGS BANK, Programmer Recruiting (CW), 201 2nd St., Macon, GA 31297.** EOE.

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Bachelor's degree with strong computer science, accounting and business coursework required. Experience should include: 10 years supervisory and management; writing and negotiating contracts and proposals; evaluating and purchasing computer hardware and software; knowledge in mini and micro computers, computer operations, systems administration, programming systems analysis and data communications. Qualified candidate will also have excellent interpersonal and communication skills.

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***FULTON COUNTY BOARD OF EDUCATION***

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Application package consists of: a letter of application with three (3) current (written within 1 year) letters of recommendation (one of which must be written by a present or former employer/supervisor), a resume, and copies of all college transcripts.

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(800) 359-6080,
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### TECHNICAL CONSULTANTS

Support all aspects of the PowerBuilder selling cycle, from pre-sales and demonstrations through account management. We require in-depth knowledge of PCs, relational databases and PC networks, along with outstanding communication skills and the ability to travel extensively. Current locations: Atlanta, Chicago, Dallas, Houston, San Francisco and Toronto. *Contact: Elizabeth Tepper.*

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Powersoft is seeking experts to join our consulting organization. This group is dedicated to ensuring our clients' success in developing PowerBuilder applications. Extensive experience with client/server design and development, GUI design, SQL databases and PowerBuilder is required. Applicants should enjoy working with a wide variety of clients, possess excellent communication skills and a willingness to travel extensively. Current locations: Boston, Chicago, Houston, Long Beach and San Francisco. *Contact: Traci Weaver.*

**Positions are also available for TECHNICAL SUPPORT ENGINEERS in our Boston office.**

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SYSTEMS ANALYST to provide specialized computer consultancy on customer's location to design, develop and analyze system applications software on IBM AS/400, IBM S/36, IBM/PS2 and RS6000 workstations using COBOL, Realia COBOL, CL, SQL/400, SPII, OCL, RPG/400, RPGII, PC/Support, C, Query/400 and IEW or SYNON Case Tool; data communications interfaces and compiler construction. Require: B.A. (or equivalent) in Management Information Systems with two years of experience in the above described job duties. Salary: $34,000/year. Apply with resume to: Georgia Department of Labor, JOB ORDER # GA5598696, 1275 Clarendon Ave., Avondale Estates, GA 30002 or to the nearest Georgia Job Service Center

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SENIOR COMPUTER ENGINEER to design and develop BIOS for 80486/80386 AT, IBM AT compatible, and IBM PS/2 compatible high speed machines; Make necessary modifications to make the BIOS processor and speed Independent and to update BIOS for INTEL Pentium, INTEL S-series, CYRIX, IBM, and AMD microprocessors; Develop BIOS for AMI motherboards, and ISA, EISA and PCI Bus machines; Develop power-management BIOS for laptops, notebooks, and palmtops; Use assembly language of INTEL 80486/80386/80286/8086/8088 microprocessors and of INTEL 80387/80287/8087 numeric processors; Develop computer language translators (compilers, interpreters); Develop communication software between two AT compatible machines running different operating systems; Use AT-BIOS, C, and Basic on DOS, OS/2, XENIX/UNIX operating systems; Use IBM PC/XT/AT architecture and add-on boards. Require: M.S. in Computer Science with four years' experience in the job duties as described above or as a software/design engineer. Salary ranges from $44,000 to $52,000/ year depending upon the number of years of experience in excess of the minimum required. Apply with resume to: Georgia Department of Labor, Job Order # GA 5597990, 1535 Atkinson Road, Lawrenceville, GA 30243 or to the nearest Georgia Job Service Center.

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Major International textile manufacturer has an Immediate opening in the Information Systems Department.

Minimum Requirements:

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- CL, RPGIII a must
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Competitive salary & excellent benefits. Please send resume in confidence to:

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## DIRECTOR, ISS TECHNICAL SUPPORT

PALM BEACH COUNTY, FLORIDA. Assists Dept. Dir. with tech. & mgmt. activities related to planning, designing & supporting tech. operating environments for all computerized systems for County dept. & Constitutional Ofcs. Responsibilities incl. all platforms; client server solutions to mainframe systems. Reports to ISS Dir. Requires B.S. in Computer Sci. or closely related field & 8 yrs. progressively resp. exp. in tech. support, incl. 2 yrs. suprv./managerial exp.; exp. w/ proprietary & UNIX based systems preferred; or any equiv. comb. of related trg. & exp. Starting Sal. $49,528 - $75,115/yr., DOQ & salary history. Applic./resumes must incl. SS# & position title & be recd. by 5 PM on 2/26/93: PALM BEACH COUNTY PERSONNEL, 3111 S. Dixie Hwy., S. 120, W. Palm Beach, FL 33405 or FAX: (407) 355-1637. EO/AA

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PROGRAMMER/ANALYST: Dev. & maintain IBM AS/400 Token Ring LAN & maintain Wide Area Network. Perform ANSI.X12 standard EDI, data & systems analysis for IBM AS/400. Select computer equip., use stat. languages to perform sales forecast., train corp. staff. Trouble shoot software & hardware (IBM pc's, MAC) & repair pc's. Maintain & dev. Metaview Imaging Systems. Min. req. incl: BA, BS or BBA in IS, CS or BISQA; 3 yrs in above pos. or in related w/dem. ab. to indep. est. & support Novell Network & LAN. Troubleshoot & repair pc's & anal., review & alter comp. programs (MS in CS, CIS or BISQA accept. in lieu of exp.); and able to use; o/s (Novell, DOS & System 7), Database (DBase, Clipper & Paradox), Spreadsheet, WP & Project Man., RPGIII, COBOL, PASCAL & OSI Seven Layers Network Arch., EDI, Mainframe op. & stat. programs (SAS & SPSS). $26,600/ yr, 40 hr/wk, 8-5. Employer paid ad. Resumes to: Mississippi State Employment Service, Job Order No: MS 2635982, 100 Felix Long Drive, Starkville, MS 39759-9983.

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Software Engineer responsible for the design of software applications or routines; develop, test, & implement these applications &/or routines; create required documentation such as functional specifications, design, implementation documentation, etc.; manage projects &/or programs. Will work within a software supply business context with an emphasis on utilizing networking, client/server computing & optical, magnetic, & electronic publishing technologies. Requirements are a Master's Degree in Computer Science or Computer Engineering with an in depth working knowledge of VMS, ULTRIX/UNIX, MS-DOS, C, C++, BASIC, PASCAL, and Assembly Languages (i.e. VAX, Intel, PDP-11), Database Management Systems, Full Software Development Life Cycle, Data Structures, X-windows programming, ISO/OSI Layered Network architecture, MACH internals, UNIX internals, Parallel Debugging techniques and Device Driver Development, parallel programming environments & distributed systems in addition to applications porting, client/server applications, TCP/IP programming, design & implementation of network protocols. 40 hour work week: 8:15 a.m. to 5:00 p.m. Salary $42,390.40. If you are interested in the above position, please forward (2) resumes to Attention: Case #30277, P.O. Box 8968, Boston, MA 02114. No experience required. EOE

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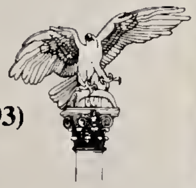

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# Marketplace

## Don't bomb out when preparing RFPs

playing it SAFE

By Murray Stein

Most information systems managers have completed a request for proposal (RFP) and know what can go wrong with the process — from poorly defined needs to broken vendor promises. As simple as some of the pitfalls are, many buyers fall prey, risking entire projects. Indeed, the simpler the problem is, the easier it is to overlook.

Following are the more common mistakes made while purchasing equipment through an open RFP process.

**Failing to give vendors enough time to respond to an RFP.** This is one of the most common mistakes that people make. If you don't give the vendor ample time, you run the risk of getting poorly developed responses or no responses at all.

Give vendors a minimum of one month from the time the RFP is published to submit their proposed solutions.

**Not requiring standardized responses.** If you don't require vendors to respond to an RFP in a consistent manner, you're asking for trouble. Without a standardized format, it becomes difficult to evaluate all solutions equally, and the best one may be overlooked.

One suggested approach is to ask the vendor to follow the outline you provide, breaking out solutions in terms of specific requirements: hardware, software and communications.

**Assigning too much or not enough staff to the RFP team.** Adequate staffing of the RFP team is critical. The size of the team can be based on the cost of the project. For instance, if a company plans to spend $2 million on a new system, it should involve at least four to five staff members and never less than two. For smaller projects with less complicated integration issues, it is a good rule of thumb to have at least one individual representing each of the the key areas. Of course, multiple team members mean multiple opinions.

**Limiting the number of vendors who respond to the RFP.** Of course, no one wants to rifle through 27 RFPs, but if you limit the number of vendors who respond, you run the risk of reducing your options. To get the best selection of vendors, request proposals from the major players supplying solutions in your market as well as vendors from related market segments.

**Being adamant about one specific solution.** There is more than one solution to every problem based on individual vendors, their product offerings and strategy. Therefore, it's important, particularly in complex RFPs, to keep your options open.

The best approach for getting what you need is to be as detailed as possible in the RFP. State what the company does and its current computing environment. Indicate future goals and needs. Finally, define the specific problem at hand. Also, include any solutions you have in mind so that vendors can understand your perspective.

### Making vendors stick to deadlines

Vendors will almost always include their latest product in a solution, and more often than not, it's a product that has just been announced. If you need the product by a certain date, ask for a performance bond. This is a written statement, either in the RFP or purchase contract, that locks a vendor into a delivery date. If the vendor doesn't make the cutoff, it pays a fee for as long as the product delivery is outstanding.

**Not thoroughly explaining your computing environment and future needs.** If you're vague on details, the vendors are forced to make assumptions about how their solutions will fit into the current infrastructure.

Structure the RFP to show the requirements of the solution with consideration given to connectivity to other systems, performance, file/data storage needs, user access and so on. These requirements should be spelled out in the beginning of the RFP document.

**Poorly defining system requirements.** If solutions are to be limited in any way, such as physical characteristics (power, temperature, size), availability time frame, upgrade path or support for standards, make certain these requirements are stated in the RFP. If not, you could run the risk of a system that's too heavy for a particular floor, or will overheat in an un-air-conditioned room, or is too loud.

**Neglecting to demand a total solution.** Vendors will solve only the problem you indicate, and few provide all the necessary pieces themselves. Vendors often recommend solutions that lack critical elements that they do not provide. In requiring a total solution, the vendor commits to a systems integrator role that ensures the proposed solution works as planned.

Stein is a technology consultant at PointSource Communications in Prescott, Ariz.

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**RFP No. 2353,** due Wed, 3/10/93 at 3:30 p.m. for a high speed line printer for MISSISSIPPI STATE UNIVERSITY-COMPUTING CENTER. No Charge.

**RFP No. 2354,** due Wed, 3/10/93 at 3:30 p.m. for a UNIX-based network server and associated software for connection to an existing network for MISSISSIPPI STATE UNIVERSITY-SOCIAL SCIENCE RESEARCH CENTER. No Charge.

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### REQUEST FOR QUALIFICATIONS

Lewis County is requesting statements of qualifications for consulting services associated with the replacement of its current automated financial system (hardware and software).

All bids and proposals are to be submitted to the Lewis County Auditor no later than **11:00 AM, Pacific Standard Time on Thursday, February 18, 1993.**

Copies of the Request for Qualifications are available from:

**Ms. Debbie Lennox**
**Administrative Secretary**
**Department of Public Services**
**Second Floor,**
**Public Services Building**
**350 North Market Boulevard**
**PO Box 899**
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**(206) 748-9169 Ext. 370**

All inquiries relative to the Request for Qualifications are to be addressed to:

**Mr. Charles McCann, Director**
**Lewis County**
**Central Services Department**
**Post Office Box 668**
**Chehalis, Washington 98532**
**(206) 748-9121 Ext. 311**

The Board of County Commissioners reserves the right to reject any and all statements of qualifications, to negotiate with one or more of the responders, and to waive informalities. The Board of Lewis County Commissioners will have the final authority to name the successful responder and enter into a contract for consulting services associated with the replacement of the county's existing automated financial system.

### NOTICE OF INTENDED SALE

Please take notice that Alliant Computer Systems Corporation (the "Debtor"), debtor-in-possession in Case No. 92-15302-JNF, U.S. Bankruptcy Court for the District of Massachusetts, intends to sell to Hughes Training, Inc. free and clear of liens and encumbrances, for the purchase price of $112,200 (the "Purchase Price"), computer equipment consisting of an Alliant Model 400 System Building Block, and I/O Module, and related components (the "Equipment").

Objections or counteroffers must be filed with the U.S. Bankruptcy Court, 10 Causeway Street, Boston, MA 02222-1074, no later than 4:00 p.m. on February 22, 1993. Any objections or counteroffers must be in writing, and any counteroffers must exceed the Purchase Price by $3,000. A copy of any objections or counteroffers must also be served upon counsel to the Debtor, Frank W. Getman Jr., Esq., Hale and Dorr, 60 State Street, Boston, MA 02109, (617) 526-6000.

If any timely objections or counteroffers are filed, a hearing will be held at 9:30 a.m. on February 24, 1993 before the U.S. Bankruptcy Court at the above address. In the absence of any timely objections or counteroffers, no hearing shall be held, and the sale of the Equipment shall proceed.

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| PS/2 Model P70 | $1,200 | $1,550 |
| PS/2 Model 80 | $900 | $1,100 |
| Compaq Portable II | $425 | $300 |
| Portable III | $500 | $400 |
| Portable 386 | $950 | $750 |
| SLT-286 | $650 | $650 |
| LTE-286 | $700 | $700 |
| DeskPro 386s | $850 | $850 |
| Apple Macintosh Classic | $700 | $700 |
| SE | $675 | $625 |
| IIX | $1,900 | $1,800 |
| IICI | $2,350 | $2,450 |
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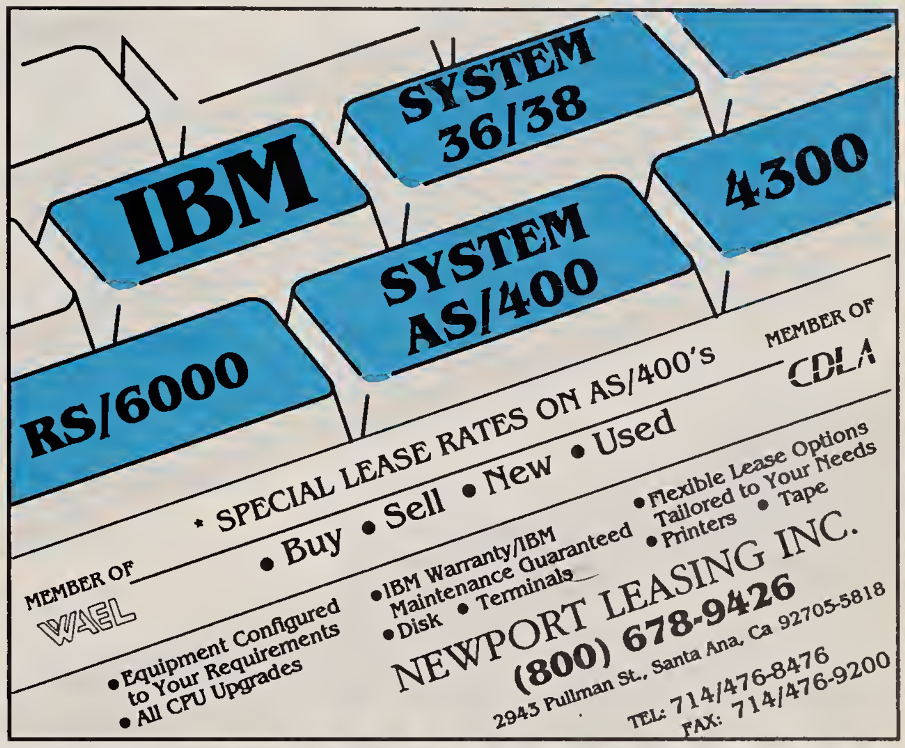

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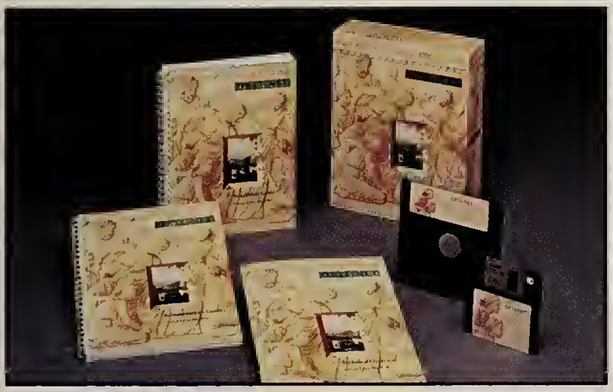

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# Friday Stock Ticker

## Gainers / Losers

### Percent

| Gainers | | Losers | |
|---|---|---|---|
| Group I Software | 21.4 | Netrix Corp. | -41.6 |
| Compression Labs Inc. | 17.4 | System Software Assoc. (L) | -26.0 |
| Ross Systems | 16.7 | Proteon Inc. | -21.8 |
| Sierra Semiconductor | 12.0 | Dataram Corp. | -20.2 |
| Commodore Int'l (L) | 11.4 | Telebit Corp. | -20.0 |
| State of the Art | 11.1 | Sapiens USA Inc. | -13.4 |
| Spinnaker Software | 10.6 | Informix Corp. | -13.4 |
| Software Toolworks Inc. | 10.0 | Easel Corp. | -13.0 |

### Dollar

| Gainers | | Losers | |
|---|---|---|---|
| Intel Corp. | 4.75 | Netrix Corp. | -8.63 |
| Group I Software | 3.00 | Cabletron Systems | -7.13 |
| Compression Labs Inc. | 2.38 | Sybase Inc. (H) | -6.50 |
| Nynex Corp. | 2.00 | Synoptics Communications | -6.13 |
| American Power Conversion | 2.00 | BMC Software Inc. | -5.25 |
| Autodesk Inc. | 2.00 | Informix Corp. | -5.13 |
| Motorola Inc. | 1.75 | Microsoft Corp. | -4.38 |
| Advanced Micro Devices | 1.75 | Progress Software Corp. | -4.25 |

## Industry Almanac

# IPOs: Shades of 1983?

The torrent of high-tech initial public offerings (IPO) continued on the heels of wildly successful offerings by **Powersoft Corp.** (PWRS) and **Gupta Corp.** (GPTA). Superserver makers **Parallan Computer, Inc.** and **TriCord Systems, Inc.** announced IPO plans last week (see story page 109).

The frantic pace is reminiscent of the IPO boom in 1982-1984, which left some investors picking up the pieces as share prices fell in the ensuing PC market shakeout. In addition to success stories Lotus Development Corp. (LOTS) and Compaq Computer Corp. (CMPQ), that time frame featured public offerings such as Computer Memories, Inc., Trilogy, Hogan Systems, Inc., Kaypro Corp. and Fortune Systems, according to New York-based Securities Data Co.

However, market analysts said the current crop of new issues stands on safer ground, at least for the time being.

One reason is that even the jumping stocks of Powersoft (up from 20 to more than 38 on its first trading day) and Gupta (up from 18 to more than 30) have healthier price-to-growth ratios than the boom stocks of the early '80s, said Kathy Smith, an analyst at Renaissance Capital in Greenwich, Conn.

Parallan and TriCord's hardware systems sell into the same client/server market that Powersoft's PowerBuilder tool set does. The slow growth of the superserver market to date is not necessarily an indicator that the hardware companies will be less successful, Smith said. Renaissance Capital expects the superserver market to develop steadily as users gradually make the transition from legacy systems.

Meanwhile, the relative dearth of client/server stocks means that companies such as Parallan and Powersoft have more elbow room in an emerging market, said Michele Preston, first vice president at Merrill Lynch & Co.

"1984 was the emergence of the PC market, and there were way too many PC companies, spreadsheet and word processor companies," Preston said. The growth of these markets did not match up to wild growth projections. "All these companies said they just wanted their 10% of the market, and if you added up all the 10s, it came to several hundred percent," she said.

Wise investors will nonetheless look closely before leaping, analysts concurred. Charlotte Walker, chief executive at Martin & Simpson Co., said the quality of recent offerings has remained high. However, she also noted, "The market is pretty discerning right now. There are some high-growth markets, IPOs with solid fundamentals and a good dose of skepticism, which I like to see." —*Derek Slater*

**COMMUNICATIONS AND NETWORK SERVICES** Off 3.1%

| Exch | 52-Week Range | | | Feb. 12 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| OTC | 34.63 | 9.63 | 3COM Corp. | 31.13 | 0.63 | 2.0 |
| NYS | 74.75 | 56.25 | American Info Techs Corp. | 74.13 | 1.38 | 1.9 |
| NYS | 55.25 | 36.63 | AT&T | 54.25 | 0.63 | 1.2 |
| OTC | 3.63 | 0.75 | Artel Communication Corp. | 2.31 | 0.06 | 2.8 |
| OTC | 24.50 | 10.25 | Banyan Systems Inc. | 19.25 | 0.25 | 1.3 |
| NYS | 54.38 | 40.25 | Bell Atlantic Corp. (H) | 54.13 | 1.38 | 2.6 |
| NYS | 55.50 | 43.38 | BellSouth Corp. | 53.88 | 1.25 | 2.4 |
| NYS | 6.75 | 3.63 | Bolt, Beranek & Newman | 5.00 | 0.25 | 5.3 |
| OTC | 18.50 | 10.00 | Brooktrout Technology (H) | 16.00 | -1.25 | -7.2 |
| NYS | 92.25 | 42.13 | Cabletron Systems | 80.00 | -7.13 | -8.2 |
| OTC | 34.50 | 17.75 | Chipcom Corp. (H) | 29.50 | -2.50 | -7.8 |
| OTC | 94.75 | 33.00 | Cisco Systems Inc. | 87.25 | -1.13 | -1.3 |
| OTC | 27.75 | 5.50 | Compression Labs Inc. | 16.00 | 2.38 | 17.4 |
| OTC | 3.44 | 0.88 | Data Switch Corp. (H) | 3.25 | -0.19 | -5.5 |
| NYS | 23.50 | 13.75 | Digital Comm. Assoc. | 18.75 | -0.63 | -3.2 |
| OTC | 14.75 | 7.50 | Digital Systems Int'l Inc. | 8.75 | -0.50 | -5.4 |
| OTC | 28.50 | 4.00 | DSC Communications (H) | 24.50 | -1.50 | -5.8 |
| OTC | 10.88 | 4.75 | Fibronix Int'l Inc. | 8.75 | -0.25 | -2.8 |
| OTC | 37.50 | 10.50 | Filenet Corp. | 12.00 | -1.50 | -11.1 |
| OTC | 4.38 | 1.50 | Gandalf Technologies Inc. | 3.75 | -0.09 | -2.4 |
| OTC | 2.25 | 0.69 | Gateway Communications | 1.63 | 0.06 | 4.0 |
| NYS | 10.50 | 2.88 | General Datacomm Inds. | 8.63 | -0.75 | -8.0 |
| ASE | 4.88 | 2.00 | Go Video | 2.94 | -0.13 | -4.1 |
| NYS | 36.25 | 28.88 | GTE Corp. | 36.25 | 1.00 | 2.8 |
| NYS | 76.13 | 59.25 | ITT Corp. (H) | 75.88 | 0.88 | 1.2 |
| OTC | 43.38 | 29.50 | MCI Commmunications Corp. | 39.75 | -0.25 | -0.6 |
| OTC | 14.25 | 2.25 | Microcom Inc. | 4.88 | 0.00 | 0.0 |
| OTC | 24.25 | 12.00 | Netrix Corp. | 12.13 | -8.63 | -41.6 |
| OTC | 19.00 | 9.63 | Network Computing Devices (H) | 17.50 | -0.75 | -4.1 |
| NYS | 17.13 | 8.13 | Network Equipment Tech. | 10.13 | -0.13 | -1.2 |
| OTC | 24.25 | 8.00 | Network General | 14.50 | -0.38 | -2.5 |
| OTC | 16.25 | 8.50 | Network Systems Corp. | 12.13 | 0.75 | 6.6 |
| OTC | 50.00 | 11.88 | Newbridge Networks Corp. (H) | 45.75 | -2.13 | -4.4 |
| NYS | 48.75 | 30.50 | Northern Telecom Ltd. | 42.63 | 0.13 | 0.3 |
| OTC | 33.50 | 22.50 | Novell Inc. | 28.00 | -2.25 | -7.4 |
| NYS | 88.50 | 69.13 | Nynex Corp. | 87.00 | 2.00 | 2.4 |
| OTC | 37.50 | 14.50 | Octel Communications Corp. | 27.00 | -0.75 | -2.7 |
| OTC | 9.00 | 3.38 | Penril Data Comm Networks | 5.25 | 0.00 | 0.0 |
| OTC | 53.00 | 10.25 | Picturetel Corp. | 23.38 | -3.25 | -12.2 |
| OTC | 17.50 | 7.00 | Proteon Inc. | 7.63 | -2.13 | -21.8 |
| NYS | 30.38 | 10.16 | Scientific Atlanta Inc. | 22.13 | -2.00 | -8.3 |
| NYS | 75.63 | 56.63 | Southwestern Bell Corp. | 70.75 | 0.88 | 1.3 |
| NYS | 28.25 | 20.75 | Sprint Corp. (H) | 28.00 | 0.00 | 0.0 |
| OTC | 27.00 | 8.38 | Standard Microsystems Corp | 20.75 | -0.75 | -3.5 |
| OTC | 18.50 | 6.88 | Stratacom Inc. | 16.25 | -0.88 | -5.1 |
| OTC | 95.50 | 18.75 | Synoptics Communications | 80.63 | -6.13 | -7.1 |
| OTC | 7.13 | 4.38 | Telebit Corp. | 4.50 | -1.13 | -20.0 |
| OTC | 9.38 | 2.13 | Telematics Int'l Inc. | 9.25 | 0.25 | 2.8 |
| OTC | 25.50 | 13.38 | US Robotics | 20.50 | 0.00 | 0.0 |
| NYS | 41.00 | 32.88 | U S West Inc. (H) | 41.00 | 1.25 | 3.1 |
| OTC | 46.00 | 12.00 | Wellfleet Communications | 37.75 | -3.75 | -9.0 |
| OTC | 22.00 | 7.00 | Xircom | 8.00 | 0.25 | 3.2 |

**PC'S AND WORKSTATIONS** Off 0.9%

| Exch | 52-Week Range | | | Feb. 12 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| OTC | 8.25 | 3.13 | Advanced Logic Research | 3.88 | -0.09 | -2.4 |
| OTC | 70.00 | 41.50 | Apple Computer Inc. | 54.50 | -3.13 | -5.4 |
| OTC | 24.25 | 11.25 | AST Research Inc. | 18.50 | 1.00 | 5.7 |
| NYS | 16.25 | 5.25 | Commodore Int'l (L) | 6.13 | 0.63 | 11.4 |
| NYS | 58.50 | 22.25 | Compaq Computer Corp. | 47.63 | -0.38 | -0.8 |
| OTC | 49.88 | 15.00 | Dell Computer Corp. | 35.63 | -3.63 | -9.2 |
| NYS | 38.63 | 26.63 | Harris Corp. | 35.75 | 0.50 | 1.4 |
| NYS | 85.00 | 50.25 | Hewlett Packard Co. | 69.00 | 0.75 | 1.1 |
| NYS | 33.00 | 14.13 | Silicon Graphics | 29.50 | -1.00 | -3.3 |
| OTC | 41.00 | 22.50 | Sun Microsystems Inc. | 35.13 | 0.00 | 0.0 |
| NYS | 32.13 | 22.25 | Tandy Corp. | 28.00 | 0.00 | 0.0 |
| NYS | 11.13 | 5.00 | Zenith Electronics | 7.38 | 0.00 | 0.0 |
| OTC | 22.75 | 2.75 | Zeos International Ltd. | 5.25 | -0.63 | -10.6 |

**LARGE SYSTEMS** Off 2.1%

| Exch | 52-Week Range | | | Feb. 12 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| ASE | 20.63 | 6.63 | Amdahl Corp. | 8.00 | 0.00 | 0.0 |
| NYS | 15.63 | 4.75 | Convex Computer | 5.75 | 0.00 | 0.0 |
| OTC | 9.50 | 1.88 | Cray Computer | 3.88 | 0.00 | 0.0 |
| NYS | 45.00 | 19.00 | Cray Research Inc. | 25.63 | 0.63 | 2.5 |
| NYS | 13.00 | 7.13 | Data General Corp. | 11.63 | -0.25 | -2.1 |
| NYS | 65.50 | 30.38 | Digital Equipment Corp. | 43.63 | 1.13 | 2.6 |
| NYS | 100.38 | 45.88 | IBM | 50.88 | -1.13 | -2.2 |
| OTC | 19.50 | 5.50 | Kendall Square Research | 16.50 | -1.50 | -8.3 |
| NYS | 110.00 | 83.00 | Matsushita Electronics | 88.75 | -0.75 | -0.8 |
| OTC | 17.00 | 6.00 | Pyramid Technology | 14.50 | 0.00 | 0.0 |
| OTC | 24.00 | 11.13 | Sequent Computer Sys. | 21.25 | -0.13 | -0.6 |
| OTC | 16.38 | 1.38 | Sequoia Systems Inc. | 2.75 | -0.19 | -6.4 |
| NYS | 54.25 | 29.50 | Stratus Computer Inc. | 33.25 | -1.13 | -3.3 |
| NYS | 16.88 | 9.88 | Tandem Computers Inc. | 13.38 | -0.25 | -1.8 |
| NYS | 13.25 | 7.75 | Unisys Corp. | 11.88 | -0.25 | -2.1 |
| ASE | 7.50 | 0.06 | Wang Labs Inc. (B) | 0.94 | -0.13 | -11.8 |

**SOFTWARE** Off 1.8%

| Exch | 52-Week Range | | | Feb. 12 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| OTC | 59.25 | 25.25 | Adobe Systems Inc. | 41.00 | -0.50 | -1.2 |
| OTC | 33.00 | 10.25 | Aldus Corp. | 17.25 | 0.50 | 3.0 |
| OTC | 19.75 | 7.00 | American Software Inc. | 8.00 | -0.13 | -1.5 |
| OTC | 25.63 | 9.75 | Ask Computer Systems | 24.88 | 0.88 | 3.6 |
| OTC | 56.50 | 23.25 | Autodesk Inc. | 45.75 | 2.00 | 4.6 |
| OTC | 37.75 | 3.50 | Bachman Info. Systems | 4.25 | 0.13 | 3.0 |
| OTC | 43.00 | 34.00 | BGS Systems Inc. | 39.75 | -0.50 | -1.2 |
| OTC | 84.13 | 37.25 | BMC Software Inc. | 68.25 | -5.25 | -7.1 |
| OTC | 28.25 | 16.75 | Boole & Babbage | 26.00 | -0.25 | -1.0 |
| OTC | 76.50 | 17.50 | Borland Int'l Inc. | 18.50 | -1.75 | -8.6 |
| OTC | 9.50 | 3.00 | CE Software | 3.50 | -0.38 | -9.7 |
| ASE | 35.00 | 9.38 | Cheyenne Software Inc. | 27.88 | -0.25 | -0.9 |
| OTC | 19.50 | 8.25 | ChipSoft | 16.25 | -1.63 | -9.1 |
| OTC | 11.88 | 5.63 | Cognos Inc. | 7.38 | 0.00 | 0.0 |
| NYS | 27.38 | 10.88 | Computer Associates | 24.63 | 0.38 | 1.5 |
| NYS | 12.38 | 4.00 | Computervision Corp. | 5.13 | -0.13 | -2.4 |
| OTC | 18.50 | 6.75 | Comshare Inc. | 9.00 | -0.25 | -2.7 |
| OTC | 17.25 | 10.75 | Corel Corp. | 11.88 | 0.00 | 0.0 |
| OTC | 46.00 | 6.00 | Easel Corp. | 11.75 | -1.75 | -13.0 |
| OTC | 25.50 | 11.75 | Frame Technology | 14.75 | 1.00 | 7.3 |
| OTC | 25.00 | 12.50 | Group I Software | 17.00 | 3.00 | 21.4 |
| OTC | 8.75 | 3.50 | Hogan Systems Inc. (H) | 8.38 | -0.13 | -1.5 |
| OTC | 25.75 | 13.75 | IMRS | 14.13 | -1.13 | -7.4 |
| OTC | 35.50 | 18.50 | Information Resources | 30.50 | 1.25 | 4.3 |
| OTC | 42.00 | 12.13 | Informix Corp. | 33.25 | -5.13 | -13.4 |
| OTC | 21.25 | 11.00 | Intergraph Corp. | 12.00 | 0.13 | 1.1 |
| OTC | 15.00 | 7.75 | Interleaf Inc. | 10.25 | -0.75 | -6.8 |
| OTC | 18.25 | 8.00 | Intersolv Inc. (L) | 9.25 | 0.00 | 0.0 |
| OTC | 20.00 | 9.50 | Knowledgeware Inc. | 11.00 | -0.50 | -4.3 |
| OTC | 54.75 | 28.75 | Legent Corp. (H) | 49.75 | -2.50 | -4.8 |
| OTC | 38.75 | 14.75 | Lotus Development | 24.25 | -0.25 | -1.0 |
| OTC | 23.25 | 13.00 | McAfee Associates | 13.50 | -0.50 | -3.6 |
| OTC | 8.38 | 1.88 | Meca Software | 7.00 | 0.38 | 5.7 |
| OTC | 22.25 | 5.25 | Mentor Graphics | 9.75 | -0.38 | -3.7 |
| OTC | 46.00 | 27.25 | Micro Focus | 43.25 | 0.63 | 1.5 |
| OTC | 20.50 | 6.50 | Micrografx Inc. | 9.25 | -1.25 | -11.9 |
| OTC | 95.00 | 65.50 | Microsoft Corp. | 84.00 | -4.38 | -5.0 |
| OTC | 36.38 | 12.00 | Oracle Corp. | 29.75 | -1.63 | -5.2 |
| OTC | 63.75 | 25.25 | Parametric Technology (H) | 56.25 | -1.88 | -3.2 |
| OTC | 40.50 | 22.50 | Peoplesoft (H) | 33.63 | -2.50 | -6.9 |
| OTC | 11.00 | 3.50 | Phoenix Technologies | 5.63 | 0.13 | 2.3 |
| OTC | 25.00 | 11.25 | Platinum Technology | 19.88 | 0.38 | 1.9 |
| OTC | 61.50 | 29.00 | Progress Software Corp. | 51.00 | -4.25 | -7.7 |
| OTC | 24.50 | 3.13 | Quarterdeck Office Sys. | 3.38 | -0.25 | -6.9 |
| OTC | 32.25 | 11.75 | Rainbow Technologies Inc. | 18.50 | 1.50 | 8.8 |
| OTC | 22.75 | 4.00 | Rasterops | 7.88 | -0.38 | -4.5 |
| OTC | 17.25 | 3.63 | Ross Systems | 11.38 | 1.63 | 16.7 |
| OTC | 27.25 | 8.50 | Sapiens USA Inc. | 20.13 | -3.13 | -13.4 |
| OTC | 26.25 | 6.75 | Software Publishing Corp. | 12.38 | 0.00 | 0.0 |
| OTC | 8.88 | 2.00 | Software Toolworks Inc. | 8.25 | 0.75 | 10.0 |
| OTC | 5.88 | 0.75 | Spinnaker Software | 1.63 | 0.16 | 10.6 |
| OTC | 16.50 | 3.25 | State of the Art | 12.50 | 1.25 | 11.1 |
| NYS | 23.63 | 13.75 | Sterling Software Inc. | 22.50 | -0.50 | -2.2 |
| OTC | 25.25 | 8.00 | Struct. Dynamics Research | 13.00 | -0.88 | -6.3 |
| OTC | 62.25 | 21.00 | Sybase Inc. (H) | 53.50 | -6.50 | -10.8 |
| OTC | 48.75 | 5.88 | Symantec Corp. | 12.25 | 0.00 | 0.0 |
| NYS | 13.50 | 5.25 | Systems Center Inc. | 8.88 | 0.63 | 7.6 |
| OTC | 25.50 | 10.00 | System Software Assoc. (L) | 11.75 | -4.13 | -26.0 |
| OTC | 13.25 | 2.50 | Trinzic Corp. | 3.75 | -0.38 | -9.1 |
| OTC | 23.75 | 11.00 | Walker Interactive Systems | 11.00 | -0.75 | -6.4 |
| OTC | 4.38 | 1.38 | Wordstar | 2.50 | -0.13 | -4.8 |

**SEMICONDUCTORS** Up 1.8%

| Exch | 52-Week Range | | | Feb. 12 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| NYS | 21.50 | 7.38 | Advanced Micro Devices | 21.38 | 1.75 | 8.9 |
| NYS | 18.75 | 8.63 | Analog Devices Inc. (H) | 17.00 | -0.50 | -2.9 |
| OTC | 20.13 | 7.63 | Atmel Corp. | 16.88 | 0.13 | 0.7 |
| OTC | 14.13 | 3.25 | Chips and Technologies | 3.88 | -0.13 | -3.1 |
| NYS | 16.88 | 7.38 | Cypress Semiconductor Corp | 10.38 | -0.63 | -5.7 |
| NYS | 16.13 | 7.00 | Dallas Semiconductor | 14.25 | -0.63 | -4.2 |
| OTC | 118.00 | 46.50 | Intel Corp. | 111.50 | 4.75 | 4.4 |
| NYS | 12.25 | 4.88 | LSI Logic Corp. | 11.00 | 0.50 | 4.8 |
| NYS | 24.38 | 12.88 | Micron Technology | 24.00 | 0.50 | 2.1 |
| NYS | 63.00 | 36.44 | Motorola Inc. | 55.00 | 1.75 | 3.3 |
| NYS | 14.13 | 8.25 | National Semiconductor | 10.88 | 0.38 | 3.6 |
| OTC | 25.25 | 8.25 | Sierra Semiconductor | 14.00 | 1.50 | 12.0 |
| OTC | 38.50 | 22.25 | SynOpsys | 32.50 | 1.63 | 5.3 |
| NYS | 59.25 | 31.50 | Texas Instruments | 54.25 | 0.50 | 0.9 |
| OTC | 10.00 | 6.00 | VLSI Technology | 7.13 | -0.25 | -3.4 |
| OTC | 7.63 | 2.13 | Weitek | 6.00 | 0.13 | 2.1 |
| ASE | 9.63 | 3.50 | Western Digital Corp. | 9.25 | 0.38 | 4.2 |
| OTC | 33.25 | 14.50 | Xilinx | 29.88 | 0.13 | 0.4 |
| OTC | 41.75 | 18.75 | Zilog Inc. | 37.25 | 0.25 | 0.7 |

**PERIPHERALS AND SUBSYSTEMS** Off 3.3%

| Exch | 52-Week Range | | | Feb. 12 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| OTC | 28.75 | 10.38 | American Power Conversion | 26.25 | 2.00 | 8.2 |
| OTC | 30.25 | 19.25 | Banctec Inc. | 26.38 | -1.63 | -5.8 |
| OTC | 23.50 | 9.25 | Cambex Corp. | 12.00 | -1.00 | -7.7 |
| ASE | 18.38 | 6.00 | Cognitronics Corp. | 15.63 | -1.75 | -10.1 |
| NYS | 25.50 | 16.75 | Conner Peripherals | 20.38 | -1.38 | -6.3 |
| OTC | 38.50 | 10.75 | Creative Technologies Inc. | 30.00 | -1.50 | -4.8 |
| OTC | 30.75 | 14.25 | Data Race Inc. | 23.38 | -1.88 | -7.4 |
| ASE | 19.66 | 4.75 | Dataram Corp. | 8.38 | -2.13 | -20.2 |
| NYS | 28.75 | 7.25 | EMC Corp. (H) | 24.75 | -0.63 | -2.5 |
| OTC | 10.50 | 5.38 | Emulex Corp. | 7.00 | -0.25 | -3.4 |
| OTC | 20.13 | 13.25 | Evans & Sutherland | 17.63 | -0.38 | -2.1 |
| OTC | 40.63 | 12.00 | Exabyte | 13.63 | -0.50 | -3.5 |
| OTC | 78.00 | 21.00 | Intelligent Info. Systems | 69.25 | -2.25 | -3.1 |
| OTC | 11.13 | 4.75 | Iomega Corp. | 6.00 | -0.25 | -4.0 |
| OTC | 34.75 | 5.75 | IPL Systems Inc. (L) | 7.50 | 0.25 | 3.4 |
| OTC | 23.25 | 10.75 | Komag Inc. | 18.63 | -2.13 | -10.2 |
| OTC | 19.63 | 8.38 | Maxtor Corp. | 9.38 | -0.38 | -3.8 |
| OTC | 12.63 | 7.13 | Micropolis Corp. | 8.75 | 0.00 | 0.0 |
| NYS | 109.75 | 85.50 | 3M Corp (H) | 107.75 | -0.25 | -0.2 |
| OTC | 7.75 | 4.00 | Printronix Inc. | 6.75 | 0.00 | 0.0 |
| NYS | 17.13 | 6.88 | QMS Inc. | 14.75 | -0.25 | -1.7 |
| OTC | 18.00 | 12.13 | Quantum Corp. | 15.75 | -1.63 | -9.4 |
| OTC | 12.75 | 3.75 | Radius Inc. | 5.50 | 0.13 | 2.3 |
| NYS | 16.25 | 7.50 | Recognition Equipment | 14.00 | -0.50 | -3.4 |
| OTC | 13.88 | 6.50 | Rexon Inc. | 6.75 | 0.13 | 1.9 |
| OTC | 22.38 | 12.00 | Seagate Technology | 17.63 | -0.88 | -4.7 |
| NYS | 77.00 | 18.38 | Storage Technology | 20.13 | 0.75 | 3.9 |
| NYS | 25.25 | 16.50 | Tektronix Inc. (H) | 24.13 | -0.38 | -1.5 |
| NYS | 88.88 | 66.75 | Xerox Corp. (H) | 85.25 | -0.75 | -0.9 |

**SERVICES** Off 2.5%

| Exch | 52-Week Range | | | Feb. 12 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| OTC | 23.50 | 12.16 | American Mgmt. Systems | 20.88 | -0.75 | -3.5 |
| NYS | 5.38 | 3.00 | Anacomp Inc. | 3.63 | -0.25 | -6.5 |
| OTC | 35.75 | 16.00 | Analysts Int'l | 32.50 | 0.75 | 2.4 |
| NYS | 55.88 | 38.75 | Auto Data Processing (H) | 54.88 | -0.38 | -0.7 |
| NYS | 17.25 | 8.97 | Ceridian Corp. | 14.63 | -0.13 | -0.8 |
| NYS | 19.16 | 12.50 | Comdisco Inc. | 14.75 | -1.25 | -7.8 |
| OTC | 13.25 | 6.75 | Computer Horizons | 11.25 | 0.50 | 4.7 |
| NYS | 84.00 | 57.00 | Computer Sciences | 77.38 | -1.63 | -2.1 |
| NYS | 10.13 | 7.13 | Computer Task Group | 7.63 | -0.25 | -3.2 |
| NYS | 40.50 | 22.00 | CompUSA Inc. | 29.88 | 0.25 | 0.8 |
| OTC | 19.25 | 6.00 | Corporate Software | 12.00 | -0.38 | -3.0 |
| OTC | 30.75 | 7.75 | Egghead Discount Software | 8.88 | -0.25 | -2.7 |
| NYS | 35.88 | 25.25 | General Motors E (EDS) | 31.63 | -3.13 | -9.0 |
| OTC | 25.00 | 9.25 | Inacom Corp. (H) | 22.75 | -2.75 | -10.8 |
| OTC | 30.38 | 6.25 | Intelligent Electronics | 14.25 | -0.50 | -3.4 |
| OTC | 14.88 | 6.63 | Merisel | 11.38 | -1.25 | -9.9 |
| OTC | 15.75 | 5.75 | Microage Inc. | 12.50 | 0.50 | 4.2 |
| OTC | 40.00 | 21.66 | Paychex | 35.50 | -0.25 | -0.7 |
| NYS | 83.75 | 59.75 | Policy Management Sys. (H) | 80.00 | -3.00 | -3.6 |
| NYS | 32.75 | 16.81 | Reynolds and Reynolds (H) | 30.63 | 0.75 | 2.5 |
| OTC | 32.00 | 22.00 | SEI Corp. | 29.63 | 0.63 | 2.2 |
| OTC | 24.38 | 16.88 | Shared Medical Systems (H) | 22.88 | -0.75 | -3.2 |
| OTC | 14.38 | 5.75 | SHL Systemhouse | 6.88 | -0.38 | -5.2 |
| OTC | 29.25 | 18.25 | Software Spectrum Inc. | 23.00 | -0.25 | -1.1 |
| OTC | 32.25 | 20.75 | Sungard Data Systems | 31.50 | 0.50 | 1.6 |
| NYS | 3.63 | 1.13 | Ultimate Corp. | 2.00 | -0.13 | -5.9 |

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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## In Brief

### EDS juggernaut

Citing expansion into commercial markets outside of parent **General Motors Corp.**, **Electronic Data Systems Corp.** last week posted net profits of $635.5 million in 1992 on revenue of $8.2 billion — a 16% rise over the year-earlier period. For the year, non-GM revenue accounted for 59% of the total business. EDS earned $178 million in the fourth quarter, an increase of 14% from the year-earlier period. Revenue in the quarter was $2.1 billion, a 3% increase from 1991 levels, the Dallas firm said.

### Record revenue

**Systems Center, Inc.** recorded fourth-quarter net earnings of $3.3 million, up 81% from the same period last year. Revenue in the period was a record $37.1 million, an 8% increase from the comparable quarter in 1991. The Reston, Va., software developer named John C. Daily as president. Daily joined the company last year as vice president of marketing. He succeeds founder Robert Cook, who remains chairman.

### IPO fever rages

Initial public offering (IPO) activity remains brisk as superserver makers **Tricord Systems, Inc.** in Plymouth, Minn., and **Parallan Computer, Inc.** in Mountain View, Calif., filed registration statements last week. Tricord is looking to raise about $30 million by selling 3 million shares at an estimated price of between $10 and $12 a share, while Parallan would like to raise $20 million through the sale of 2 million shares at an estimated price of between $10 and $12 a share. Following in the shadow of successful IPOs floated by **Powersoft Corp.** and **PeopleSoft, Inc.**, **Gupta Corp.** in Menlo Park, Calif., closed its offering by raising $39.6 million.

# Microsoft left dangling by FTC

By Christopher Lindquist

The computer industry's ears perked up in anticipation last week after the Federal Trade Commission (FTC) said it would soon make an announcement concerning a "nonpublic investigation," generally regarded as the Microsoft Corp. antitrust case.

But instead of clearing the smoke, the FTC managed to fog the issue even more, after apparently deciding not to decide the case after two years of investigation. In a terse statement, the FTC indicated it would meet shortly to discuss the situation further.

Reports had circulated that the FTC's lawyers had recommended an injunction against Microsoft, possibly concerning its MS-DOS licensing practices.

The FTC could have voted to accept that recommendation, deny it or extend the investigation. Previous speculation that the FTC might seek to split Microsoft into applications and operating systems segments has generally been disregarded.

**Now what?**

What happens now is anyone's guess. According to George Cumming Jr., a trial lawyer at Brobeck, Phleger & Harrison in San Francisco, the lack of a decision simply indicates that the FTC feels it needs more time.

That time could be spent gathering more information, discussing the lawyer's recommendations more thoroughly or possibly working out a settlement with Microsoft attorneys.

"It's kind of difficult to read into the thing," Cumming said.

For its part, Microsoft said it is continuing to cooperate with the FTC but otherwise, business is going on as usual.

Novell, Inc., which is widely rumored to be preparing a class-action antitrust suit against Microsoft, said it will have no comment on the FTC investigation until a decision is rendered.

Wall Street watchers said it seemed strange that the FTC would be unable to render a decision after more than two years.

One possibility is that the FTC may be deadlocked. In theory, at least three of the five members would have to vote either in favor of or against any possible action.

However, one of the five members of the investigating committee reportedly removed himself because of conflict-of-interest reasons shortly before the decision was to be made public. That created a situation in which a tie was possible.

According to published reports last week, the FTC's vote ended in a 2-2 tie.

**Stock gyrations**

Wall Street speculators pushed the price of Microsoft stock down five points to $85 the day before the FTC's anticipated Feb. 5 announcement, after reports circulated that the federal agency's lawyers had recommended an injunction against Microsoft. But the stock rebounded to close that day at 89 as fears of a potentially damaging decision were quelled — at least temporarily. The stock was trading in the mid to upper 80s late last week.

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# Informix diversifies Unix portfolio

By Jean S. Bozman

MENLO PARK, CALIF.

Traditionally Unix-oriented Informix Software, Inc. is broadening the reach of its database servers. Company executives said the firm is porting its Informix-OnLine database to Microsoft Corp.'s Windows NT, accelerating a push to sell a 6-month-old Novell, Inc. NetWare Loadable Module version and considering more support for Apple Computer, Inc.'s Macintosh.

The moves come as the once-struggling database vendor caps an extremely successful year. Last week, the company reported 1992 net profits of $54 million on record revenue of $283 million (see chart).

Informix Chief Executive Officer Phil White, who is credited with turning around the firm's poor financial performance in 1990 — a year in which it posted a $46.4 million loss — said client/server sales would drive annual growth rates of 20% to 30% for the next few years.

"Selling database technology is like selling hotcakes because the tide's rising," White said, referring to the downsizing trend. "I think our whole message will change from Unix to open [systems]. Given that our database will be on NetWare and NT, it'll be a much bigger marketplace."

The NT version of Informix-OnLine is expected to debut later this year, at about the same time as NT databases are available from competitors.

**Open to open systems**

Open systems are forcing the issue of multiplatform support, industry analysts said. "I don't think Informix is indelibly wed to Unix as a platform," said Bill Higgs, vice president of software research at Computer Intelligence/Infocorp in Santa Clara, Calif. "It is important for [the] Informix [database] to be open as a server or as a multiuser database platform."

Informix has long had support for Apple Macintosh clients via its Wingz graphical spreadsheet. A forthcoming end-user query tool called Storm will be ported to the Macintosh, White said.

Support for more platforms will be crucial, industry analysts said, as client/server systems embrace more hardware and software platforms. Informix, with its small direct sales force, must cover its bases, they noted, because it gains two-thirds of its revenue from sales through value-added resellers and independent software vendors.

"If they don't play the way the other database guys play, then they won't be in the game," said Rikki Kirzner, a principal analyst at Dataquest, Inc. in San Jose, Calif. She referred to the blanket platform support offered by competitors such as Oracle Corp.

Higgs said he believes Informix has the financial and engineering resources to extend its database products to other platforms. Its record 1992 revenue stemmed largely from providing Unix database systems in an era of downsizing, when midrange and low-end Unix packaged solutions were selling well. However, as Informix moves to other platforms, it will meet competitors such as Oracle and Sybase, Inc. on more fronts. "It's an extension of the competitive battle that's already going on," Higgs said.

**At a glance**

More than 80% of Informix's sales are attributed to Unix-related products, the company said. Informix is second to Oracle in worldwide license revenue for Unix relational database products, according to International Data Corp., but Informix said it still leads Oracle in the number of units shipped. Informix claimed it has the largest worldwide installed base of Unix relational database licenses, totaling more than 600,000 units.

**FINANCIAL UPDATE**

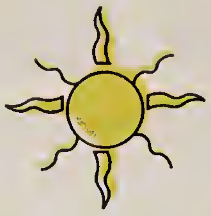
**Informix Corp.**

Informix more than quadrupled its '92 net income over '91

| | 4Q '92 | Year-end '92 |
|---|---|---|
| Revenue | $96M | $283.6M |
| Percent change from '91 | 78% | 58% |
| Profit | $22.2M | $54.7M |
| Percent change from '91 | 166% | 334% |

CW Chart: Stephanie Faucher

# Wysiwyg



**GREAT NAMES**

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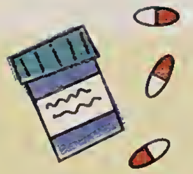


## Close, but no cigar

Is 99.9% computer/network uptime good enough? If we settled for things done right 99.9% of the time, we'd have to accept:

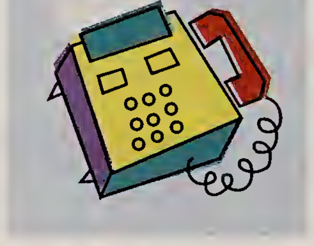
- 20,000 incorrect drug prescriptions each year.
- 16,000 pieces of mail lost every hour.
- 500 incorrect surgical operations each week.
- 50 newborn babies dropped by doctors every hour.

**Data security** firm Datakey, Inc. is going to supply physical security firm Medeco Security Locks (maker of lock and key sets) with portable data carriers and interface components. — *Hmm. Does that mean they have safe sets?*

Sources: *Successful Meetings* magazine, January 1993; *InfoText* magazine, January 1993.

## Clinton out-faxed

**The Bush/Quayle re-election campaign was clearly outfoxed by the Clinton/Gore campaign, but it wasn't out-faxed. The Bush team sent 550,000 items via broadcast fax technology — mostly press releases — compared with 200,000 faxes from the Clinton team.**



Have any stories about unusual vendor sales pitches? If so, please contact Lory Dix or Jodie Naze at (800) 343-6474. If we use your ideas, we'll send you a gift.

## The Fifth Wave by Rich Tennant

"A CONSULTANT TOLD US THAT POLYESTER CAN CAUSE SHORTS IN THE SYSTEM, SO WE'RE TRYING AN ALL-LEATHER AND LATEX DATA ENTRY DEPARTMENT."

## Inside Lines

### Getting real chummy

Industry analysts were buzzing last week about the imminent merger of the OSF and Unix International (UI). The two onetime enemy camps are so friendly these days it's a wonder they don't throw joint company picnics. OSF President David Tory recently attended a big UI get-together in New Orleans, where OSF technologies such as Distributed Computing Environment (DCE) were warmly welcomed. OSF Board of Directors President Mike Saranga disavowed any concrete plans to merge the two nonprofit companies, however. "The way the industry is changing, though, anything could happen," quipped Saranga, who represents IBM on the OSF board.

### Chips ahoy

Vendors will get the go-ahead, and the chips, to ship their first Pentium systems on May 20, industry sources said. Less talked about is Intel's Peripheral Control Interface (PCI) local bus architecture, which will be discussed publicly on March 22 along with the technical details of Pentium. Sources say PCI will be available in time to be designed into Pentium systems for release in late May, though it appears both PCI and existing schemes will be used in systems disclosed that day.

### Battered, black and blue

IBM is expected to announce this week that it will cut even more employees than originally planned from its North American sales organization. A Merrill Lynch analyst predicted the cut — to be made initially through early-retirement options and then, if necessary, layoffs — would number around 7,000 vs. the original target of 4,000 to 6,000 this year. But that still might be a low estimate, some said. James Cassell, an analyst at Gartner Group, said IBM will probably need to cut some 40,000 employees from its total worldwide work force this year, another 30,000 in 1994 and perhaps another 30,000 in 1995.

### Taking stock of the situation

Parallan's IPO filed last week (see stories pages 108 and 109) has repercussions for IBM, which owns an estimated 20% to 25% stake in the superserver maker. When and if the 2 million-share IPO breaks, IBM's ownership of Parallan, whose multiprocessing box IBM resells as part of the PS/2 line, will automatically dilute to 14.1%. But if IBM exercises stock options negotiated at the time it bought into Parallan last year, IBM could own just shy of 34% of the company and can install two members on Parallan's board. IBM watchers noted that it would be smart to keep a hand in Parallan because the market is poised for flight in 1993 and 1994.

### Through the looking glass

Although DEC doesn't expect its VMS base of customers to move whole hog to Microsoft's Windows NT overnight, the company is evaluating several possibilities to make that transition easier. Those moves include a potential port of the Win-32 API to VMS or the development of a VMS subsystem for NT that is similar to the subsystems Microsoft has developed for DOS, OS/2 and Windows under NT, said Pauline Nist, group engineering manager for Alpha AXP and VAX servers at DEC. Of the two initiatives, a Win-32 port to VMS would be most welcome because it would allow developers to create applications that would run on both NT and VMS, said David Solomon, a former DEC engineer who is now president of Solomon Software Technologies.

*Exxon is currently beta-testing the sports fan's ideal client/server application in Germany. Using PowerBuilder tools from Powersoft in Burlington, Mass., the oil concern is building an application that will allow German soccer fans to purchase tickets to soccer matches at Exxon gas stations. The application will link client systems at service stations with servers at individual stadiums and servers at Exxon corporate offices. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try* Computerworld's *24-hour voice-mail tip line at (508) 820-8555.*

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